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Electrical Contracting

With Which Is Incorporated
The Electragist

February
1931

COMPLETENESS

6 COMPLETE WIRING SYSTEMS



- ① **RIGID STEEL CONDUIT**
② **STAINLESS STEEL CONDUIT**
③ **STAINLESS STEEL ARMORED CABLE**
④ **METAL MOLDING**
⑤ **NON-METALLIC FLEXIBLE CONDUIT**
⑥ **NON-METALLIC SHEATHED CABLE**



and **WIRES and CABLES**

for *Every* CONCEIVABLE REQUIREMENT

National Electric Products Corporation
National Metal Molding Division - Pittsburgh, Penna.



JEFFERSON UNION RENEWABLE FUSES



New Ferrule Type Union Renewable Fuse. Besides the link there are only three parts—casing and two one-piece end caps.



Knife-blade type Union Renewable Fuse

NEW HANDY FUSE WRENCH



The handiest tool for tightening and loosening ferrule type renewable fuse caps. Comfortably-sized hard wood handle, with hole in each end—one for fuses of 1 to 30 amp., 250 volt size; the other for 31 to 60 amp., 250 volt, and 1 to 30 amp., 600 volt. Your wholesaler has it.

SAVE

..IN RENEWAL TIME
..IN YEARLY FUSE COSTS

To all outward appearances, renewable fuses may look alike. It's what's inside that makes the difference. Take the new ferrule type Union Renewable Fuse, for example. It has no loose washers or end plugs. The end caps are one piece, assuring positive contact with the fuse clips. Venting is through the end caps—not the threads. Both ends are open for inspection and cleaning. The link is slightly rounded at ends for quick, easy insertion. Too, it is supplied bent at one end for automatic length adjustment and perfect fit, is held diagonally in the heavy horn fibre casing. It cannot be put in any other way. It cannot touch or char the fibre. These hidden features of superiority assure long fuse life, quicker renewals, lower yearly fuse costs.

The knife-blade type Union Renewable Fuse gives the same full measure of savings in renewal time and fuse costs. When a knife-blade type fuse "blows", the simplified design and minimum number of parts make insertion of a new link but a matter of seconds—less "time out" for both men and machines. Simply remove one end cap. The other cap remains on the knife-blade. The notched ends of the links permit speedy renewals when studs are only slightly loosened. And the rugged construction, together with an exclusive method of venting through the fibre, insures continuous use after repeated blowouts.

On your next order it will pay you to specify Union Renewable Fuses because they give better and longer service at less cost.

IT PAYS TO
SPECIFY "UNIONS"

JEFFERSON ELECTRIC COMPANY

1503 W. 15th Street, Chicago, Ill.

(A-1019R)

Electrical Contracting

VOLUME 30

With which is incorporated The Electragist

NUMBER 4

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Resale Price News

Only slight price changes were made during the past month in electrical materials and equipment. Minor price changes were noted in:

Brackets for insulators
Weather-proof receptacles and plugs
Attachment plugs
Receptacle plates and plugs
Receptacle caps and plugs
Tape

Pound prices on magnet wire have been reduced because of the lower base price now in effect on this wire.

Additions to the listings include: Universal rack units; Findlay numbers to listing of single point screw brackets; wireholders with insulators; flat cross-arm braces; reducing washers; some G.E. cord and motor connectors; small size P type threaded conduit fittings; weather-proof receptacles and plugs; Paine adjustable pipe hangers, and outdoor meter boxes.

Slight price reductions have been made in carriage bolts and machine bolts and price increases were made on some numbers of Arrow cord and motor connectors.

Published Monthly by

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CHARLES W. FOBREICH, Vice-Pres. EDGAR KOBAK, Sec.-Treas.
520 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

Entered as second class matter November 14, 1928, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Copyright, 1930, by The Electrical Trade Publishing Company. Yearly subscription: United States, \$2.00; Foreign, including Canada, \$2.50. Single copies, 20 cents.

Member Audit Bureau of Circulations and National Publishers' Association. Also Publishers of *The Jobber's Salesman* and *Mill Supplies*.



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*The Greenway Apartments,
Forest Hills, New York*

*Benjamin Braunstein
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*The Elite Electric Co.,
Electrical Contractors*



With an Edwards Telephone Switchboard and other fine appointments

The Lobby Will Sell the Apartment

THIS photo only tells half the story. Here is what has gone before Edwards was called in when this apartment was all on paper.

A beautiful cabinet was imported from Europe to harmonize with the rich Jacobean scheme of decoration and furnishings being planned.

Edwards was commissioned to build into the cabinet, a standard 99 lamp signal telephone switchboard to provide faultless intercommunication.

The striking results achieved by Edwards craftsmen is significant of Edwards ability and Edwards fifty-nine years as signaling specialists.

You, too, will find Edwards profitable consultants wherever signaling is concerned.

EDWARDS and COMPANY
INC.

140th and Exterior Sts. New York City

Universal Distribution and Offices in Principal Cities

A Challenge to the Manufacturer

DOES the development of the use of electricity demand the introduction of new and lower cost wiring methods? The public utilities claim that it does and in answer to this suggestion, a number of lower cost methods are being tried out.

What are the manufacturers of commonly used wiring devices going to do about it? Are they going to wait, as they have in the past, for a new method to be proposed and then to fight it? Seldom has this method been tried with any success. And each time it has been tried it has left a very bitter taste.

ELECTRICAL CONTRACTING holds no brief against the development of new and improved wiring methods. In fact, where they will serve to advance the use of electric energy with safety we welcome them.

• • •

ON the other hand, ELECTRICAL CONTRACTING greatly deplores these battles over new methods because they almost invariably result in a fresh attack upon the National Electrical Code standards by those interests which would like to see the Code exist in skeleton form only.

At the present time the Code recognizes a number of wiring methods. Are they worth while? What are their advantages? Why should the industry hesitate to approve anything less safe?

This is a challenge to the manufacturers to do a selling job. To date the selling has been by the individual

manufacturer in competition with a similar product made by someone else.

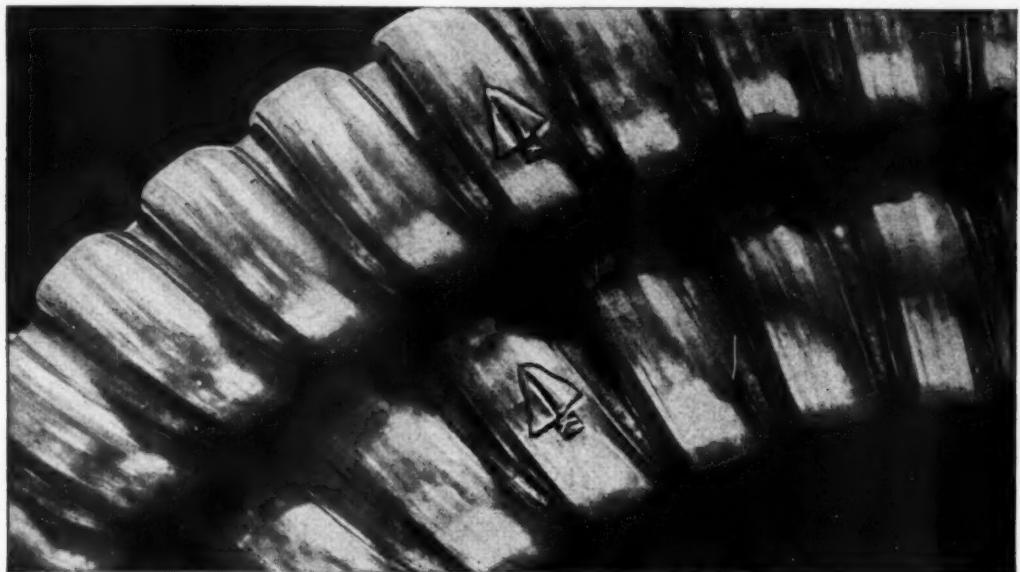
Nobody has sold the wiring method itself to the electrical industry. The manufacturers have taken it for granted that the industry knew why present wiring methods were desirable when, as a matter of fact, the utilities, through their propaganda for lower cost wiring, are raising doubts in people's minds.

The manufacturers of conduit, armored cable, porcelain, loom, sheathed cable and all other methods have, in each group, a very definite job of co-operative selling to do, if they expect to dam the flood of new low cost wiring methods which is coming.

• • •

WHILE a new method is obviously practical, economical and worth while, nothing can or should stop it; but a better understanding and appreciation of present wiring methods will go a long way toward deterring the promotion of less desirable methods.

ELECTRICAL CONTRACTING, speaking in behalf of the electrical contractors of the United States, urges the manufacturers of wiring material to cooperatively tell the industry the advantages and the economies of each wiring method, not defensively but positively and aggressively. The central stations are telling one side of the story. The manufacturers must accept the challenge or the consequences.



For Better Identification... A New Marker on Anaconda

A B C

We have registered with the Underwriters a new marker for Anaconda ABC Armored Cable—the well known Anaconda arrowhead, symbol of quality on 65 different wire and cable products.

The catalog cover features the Anaconda logo at the top, which includes a stylized arrowhead pointing upwards and the text "ANACONDA from mine to consumer". Below the logo, it says "REG.U.S. PAT.OFF.". The main title "ANACONDA WIRING PRODUCTS" is centered above a list of products. The list includes: Rubber-Covered Wire, Flexible Cords, ABC Armored Cable, Duraduct Loom, Flexible Steel Conduit, and Durax Sheathed Cable.

ANACONDA
from mine to consumer
REG.U.S. PAT.OFF.
ANACONDA WIRING PRODUCTS
Rubber-Covered Wire
Flexible Cords
ABC Armored Cable
Duraduct Loom
Flexible Steel Conduit
Durax Sheathed Cable

ANACONDA WIRE & CABLE COMPANY

GENERAL OFFICES: 25 BROADWAY, NEW YORK
CHICAGO OFFICE: 20 NORTH WACKER DRIVE

Sales Offices in Principal Cities

Electrical Contracting

With which is incorporated The Electragist

VOLUME 30

FEBRUARY, 1931

NUMBER 4

The Fellow Who Thought He Couldn't LOSE

THE other day when I was out at the ball-park to check up on any changes, additions or material that would be needed on the lighting job I had done there last summer, I heard a great baseball yarn written by Bozeman Bulgar twenty-five years ago.

It seems there was a pitcher in the old days so good that it got so the opposing batters wouldn't even trouble to swing at his slants. He would simply say: "Well, fellah, I'm gonna slip ya my 'Squizzer'". The batter would yawn and answer: "Oh, never mind," the umpire would roar: "S-t-t-r-r-i-i-k-e!" and so on for nine innings. The Boy Wonder's team won 88 straight games without a bat being lifted against him.

But one fine day there stepped up to the plate a big 200 pound gorilla with a face like a horned-toad and half a plug of Horseshoe in each cheek. "Well, fellah," says the invincible pitcher, "I'm gonna feed ya my famous 'Parabola,' whaddya say?" The ape wiped his face on his sleeve, jerked his cap and bellowed back: "Let the so-and-so come!" Well, the pitcher nearly



By JOHN WISE

The Successful Contractor

fainted, but he couldn't refuse, so he let fly with his Parabola. But it had been so long since he had really pitched to a batter that he had lost all his stuff. The gorilla knocked the ball out of the lot and the batters who followed took heart and slammed the Boy Wonder out of baseball.

Which is exactly what happened across the river to a contractor who had been getting all of the large wiring jobs in his bailiwick for so long that nobody would make any serious effort to bid against him. So when this Rocktower Hotel job broke, he just took things easy and acted independent-like, as usual.

But up jumped the devil, in the shape of a go-getting guy from the Heights, who doped out a real job, did a lot of plain and fancy contacting of the owners and builders, and grabbed the contract—and at fair price, too. As soon as that happened the rest of the gang got back their courage.

Believe me, I'm taking this lesson to heart, because it shows that no contractor can be sure he has anything sewed up for keeps. In fact, when it looks like you have a monopoly on some choice work, that's just the time to start worrying about how to hold it.

• HOW CONTRACTORS

GOLF COURSE LIGHTING

By F. B. GREEN

Green Electric Co., Sioux Falls, S. D.

WHEN the first miniature golf courses were laid out a new field was opened to the electrical contractor, who is the logical person to furnish the lighting. And when a contractor signed up for his first job of this kind he could do one of two things. He could do the job and go back to his regular work, forgetting the golf stuff unless another job fell in his lap.

Or he could make up his mind that he was going to get many more of these jobs by seeking other prospects and selling his particular method of installation. While wiring our first course, we made a real study of the situation and decided to go deeper.

While working on our second course installation we got the idea of building a course of our own where we could work out a perfect installation which would serve as an advertisement and a means of demonstrating the methods resulting from our studies. So we erected a course at Watertown, S. D., as we operate in a wide radius around Sioux Falls and knew this course would be seen by many prospects from other communities.

Without waiting for breaks or good weather we immediately started to sell golf course lighting on the basis of our experience and the economy resulting both through new methods and properly laid out installations. The result is we have recently completed four inside courses in Sioux Falls and have signed up to light three outside layouts as soon as the weather permits.



INDUSTRIAL MAINTENANCE

By E. J. THER

Ther Electric & Machine Works, Chicago, Ill.

WE have been in the electrical maintenance and motor repair business fifteen years, and the cumulative experience we have gained prompts us to emphasize service as the important factor in building up our business.

By service we do not mean our ability to arrive at a customer's plant at breakneck speed in the event of a breakdown, but rather in the rendering of a creative service that helps to forestall expensive breakdowns. The attitude on the part of industrial users is to use their existing equipment up to and beyond the rated capacity. The development of new electrical equipment

and devices offers the industrial contractor a chance to point out to such industrial users the value of modernizing their electrical equipment, thus effecting economies in labor, power, and losses through breakdowns.

As an example, one of our customers developed a machine well suited to their production requirements, but not fully efficient because the electrical energy operating it was not fully controlled. As a result gears were being stripped, causing avoidable delays, and expenditures. By going over this machine thoroughly we found it practical to install what might be called limit switches. This resulted in the solution of the gear stripping problem our customer was experiencing and was one instance of service that we like to give, it invariably results in building confidence in our ability to cope with the electrical problems of our customers.

Our motor repair department is a large part of our business. Through it we determine and recognize at once many unusual and particularly troublesome electrical faults of motors, control apparatus, etc. If these faults cannot be corrected new equipment is installed giving us a profit on the sale.

Our electrical maintenance and installation service takes us into plants of all sizes and to all types of industry. Some of our customers prefer to have their work done on a yearly contract basis, placing all the responsibility of electrical maintenance with us. In such instances we make periodic check-ups of the equipment in those plants, install new equipment as the need for it arrives, and take care of any other service our customer requires. For instance, we have made installations of V-Belt drives where we felt such equipment could be used to replace other types of drives economically and efficiently.



COMMERCIAL FIXTURES

By D. J. JOHNSON

Jefferson Electric Co., Chicago, Ill.

O PPORTUNITIES for electrical contractors to sell their services and equipment exist today just as they ever did. What contractors need to do to cash in on them is to continually keep building up an attitude to cultivate such opportunities as they present themselves in the course of their business activities. As an example, an opportunity presented itself to me to increase my sales of commercial glassware fixtures.

A few months ago I started to do some wiring work for a construction company which was engaged in selling complete store installations to bakers, confectionery

TRACTORS SELL .

and delicatessen stores. It also happened that this company had another firm install the commercial glassware fixtures. Right there we decided that on the next job we will be prepared to sell the idea of better service to the customer if we do the complete job of wiring and fixture installations. To make sure of landing the business we presented samples of the latest units.

We were able to convince our customer that we could give greater service to him by combining the wiring and fixture installations to be made by us. As time went on another opportunity presented itself. This company was preparing a model exhibit of all the equipment a modern store should have, thereby making it easy for a prospect to decide on the equipment he will want by seeing in one place what is on display. As soon as we heard of the plans for such an exhibit we offered to install and properly maintain the fixtures and electrical equipment on exhibit. This meant an expense that the average contractor may not feel justified to undertake, but in view of the results obtained we are well pleased. It has resulted in the increase of our fixture business by 75 per cent.



REMODELING

By H. E. LEASURE

Frank Leisure Co., Inc., Chicago, Ill.

REMODELING work has no business peaks and is practically free from seasonal depressions. It is, therefore, an ideal subject for specialization. We have found that specialization in remodeling permits the building up of an organization with which efficient work can be done at a satisfactory price to the consumer and profitably enough for the electrical contractor. An organization undertaking a general run of remodeling work can lose money on the job or make the cost of the job too high through inexperience.



Most of our remodeling work comes to us from customers for whom we have previously done work, such as building management concerns and individual companies. In other words, the confidence of our customers has been built up over a long period of time through actual demonstration of our ability

to handle remodeling work. To improve our efficiency in this work we continually study the peculiar structural differences of the buildings.

We have found that in remodeling work we are forced to carry in stock small parts of equipment and supplies of different makes to enable us in making additions, repairs or alterations to install the same kind or make of equipment that is used in such places.

Another help in improving and selling our services is a scrapbook for recording special installations we make which may be duplicated in another location. Such a record simplifies the procedure of going after the additional work and at the same time it gives us a good record of costs of material and labor.

On most telephone and signal installations we make we keep a complete diagram of the hookup. Thus we can work under the principle that if a job is once ours it is always ours, for we are continually demonstrating our superior ability to modernize and maintain that job.

CONTROL EQUIPMENT

By R. T. HYRE

Hyre Electric Co., Chicago, Ill.



SELLING the application of control equipment necessitates actual demonstration in order that our prospect may think of its practical applications in his plant.

The fact that we never overlook the opportunity to make one of these demonstrations brings us a considerable amount of control business. A typical opportunity presented itself to us to demonstrate remote control equipment to a gathering of printing plant men one evening recently. An opportunity to dramatize remote control equipment was made possible by the fact that the meeting was held in an office building across the street from our place of business. We arranged to have an exhibit at the meeting next to a window. It consisted of a push button switch with the words underneath, "For remote control try this", by "HYRE, YOUR RESPONSIBLE ELECTRAGISTS." Outside of the window we mounted a one thousand watt projector which was focused downward in the direction of our place of business.

When a person pushed the button the projector would light up pointing downward and that naturally prompted the individual to look down below with the result that he saw our place of business flooded with light from within the store and shop. The push button would be pushed again dimming the projector light and the person noticed that at the same time all the lights went out in our place of business down below. To create more interest we had some of the spectators place their hands in front (Continued on page 97)

VENTILATION

Increases *Growth of*

Business 20%

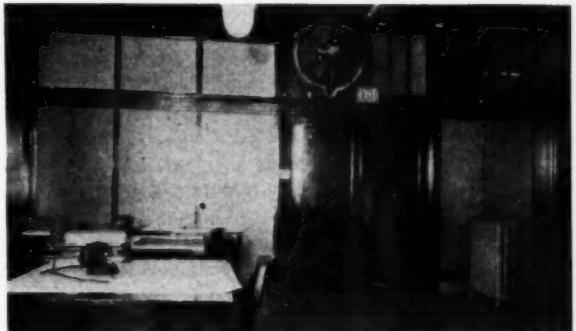
SPECIALIZATION

Case Study No. 1

"BACK in 1919 when competition for general wiring business was getting keen in Chicago, we decided that we should select one line, preferably a line that offered good sales possibilities, and do an outstanding job so that we would be recognized as authorities in the field." That, according to J. J. Sahula and J. J. Soustek is the how and why the Okeh Electric Co., started specializing in the ventilating field.

Electric ventilating fans in their opinion offered the best field, as there were great possibilities for selling and there are still great opportunities for contractors who will go out and sell. There are many installations in operation now, but they are aware of the fact that only a small percent of the possible installations have been made. The field is still far from saturated.

Along with their ventilating work this firm has continued doing industrial and commercial wiring. These two fields have dove-tailed together with excellent results, for example, when they are called on to make an installation of a ventilating fan, they take that opportunity to tell their client about additional wiring which he should have done, and vice-versa, when they are on a job doing wiring, they tell the clients of the benefits of an efficient ventilating system.



Offices form one of the best fields in which to sell ventilation. The sales talks in selling offices are based on the possibilities of increasing production with fresh air.

Working these two lines together as they have, the increased business this specializing has brought them is conservatively estimated at 20 percent. By this it is not meant that their total volume of business has only increased 20 percent since they started specializing, but that by specializing they have had 20 percent more business than they could have normally expected.

No imagination is needed to estimate what this has meant on "the right side of the ledger". Their overhead expenses have remained almost the same and by specializing and using a little salesmanship the additional volume, to use their term, "has been almost all velvet".

By specializing this firm has considerably increased the size of the jobs handled. Previously, when they were called in to do a \$500 wiring job it meant \$500 and no more, but now they are able



Industrials offer splendid opportunities in ventilation. When doing regular work on an industrial job the possibilities for ventilation are always studied by the Okeh men with a view to selling a system to be installed while the men are on the job.



When a ventilating system is sold the salesman gets all of the dimensions thus eliminating a second trip.

to run the job up to \$700 or more by telling the customer the advantages of good ventilation.

The wiremen employed by this firm are also specialists. They have made so many installations that they are almost able to do them with their eyes closed now. A system has been worked out which enables the wiremen to do the work very efficiently. At the same time the fan is sold, measurements are taken so that it isn't necessary to send another man out to figure how the installation should be made. A nearby carpenter shop or sheet metal shop makes up a panel from these measurements. This way when the wireman goes on the job he has everything ready to complete it in a hurry.

Special fastening brackets are sometimes necessary and when they are, they too are made up before the wireman goes to the job. The mechanics have also been trained to study ventilating conditions and recommend ventilation installations when working on other classes of work.

At times they are called on to take a used fan in on a trade-in by a customer who wants a new style or larger sized one. Incidentally, that is the only time in which a second-hand fan is brought into the shop, as they are not interested in buying and rebuilding second-hand equipment.

The fans, however, taken in on trade are carefully overhauled and rebuilt and sold only when it is necessary to meet a difficult price situation.

Realizing that they can't get out and sell every prospect, they have used considerable direct-mail advertising which has produced some very worthwhile accounts for them. This direct-mail material is sent to a prospect list which they have continually kept up-to-date over a long period of years.

Most of the direct-mail pieces are of the post card character. They do not all deal with ventilation because by selling a prospect an industrial wiring job they open the door for the sale of a ventilating installation. However, all mailing pieces deal in the fact that the firm specializes in ventilation.

Other forms of advertising from which they have received

results have been local directories, such as the classified telephone directory. These, however, have been chosen with care.

Along with this many of their clients have told friends of what good installation OKEh made for them and consequently much business has come in unsolicited. That is what building a reputation as a specialist will do.

Due to the sales these men have created for manufacturers they get a considerable amount of cooperation from them. The manufacturers, due to their activities in this territory, receive numerous leads to ventilation prospects. Leads in the OKEh Electric's territory are given OKEh with the request that they go to the prospect and quote a ready-to-run price.

A considerable amount of this cooperation is due to the fact that they standardize in one manufacturer's product. However, this is not done to the exclusion of other manufacturer's products. Thus when a prospect requests a certain brand, they can quote on it.

Before this firm selected the brand on which to concentrate their efforts, they made sure that it was a dependable product—one which would stand up and be in keeping



When a mechanic goes out to make an installation he takes all of the necessary equipment with him ready to be installed.

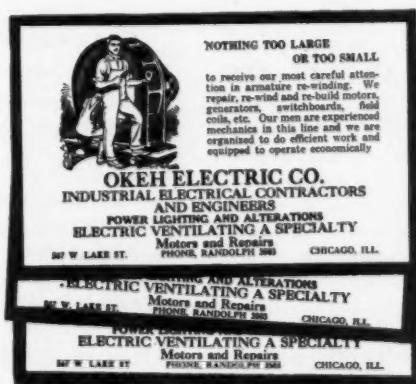
with the reputation they wanted to establish for themselves.

The problem of service has not demanded much of their attention. Only minor repair jobs have been necessary. But when a customer does call up for service, a man is sent out as soon as possible. They realize the value of a satisfied customer and do everything they can to keep their customers satisfied.

When repair work is necessary charges are made on a basis of time and material, as a flat rate basis would not be practical due to the various types of repairs required. A man that is sent out to do repair work keeps his eyes open for other wiring work that could be sold to the customer. These leads are given to one of the partners and he goes out and sells the job.

Specialization has built considerable good-will for the OKEh Electric Co. They are careful to do the best kind of a job they

(Continued on page 96)



Considerable direct-by-mail advertising is done, all of which ties in the fact that this firm specializes in ventilation.

How to Prepare

ESTIMATE TO: GRANT PARK CONST CO.	ADDRESS: 319 E. POLK ST.	DATE: 12-19-30
ARCH. OR ENG: HENRY WORTH	ADDRESS: 4783 OCEAN ST.	SET NO.: 7
NAME OF BLDG: CITY TRUST CO. BLDG.	ADDRESS: 17 So. MONROE ST.	TYPE OF BUILDING:
BANK STORE & OFFICE BLDG.	INITIALS BY:	R. H. S.
- PLANS -		
SET NO. 7	"MARKED"	(3) SWITCHES & RECEPS. PG. 3
SHEETS { E1 to E7	DATED 4-10-30	(2) SWITCHBOARDS PG. 7
{ M1 to M3	" 4-12-30	(3) LODGE HALL SPEC. EQUIP. 8
LAST REVISION DATE	{ ON ALL SHEETS	(6) METERING EQUIP. 10
	{ 4-20-30	(7) METERS FURN. BY CONTR. 11
SCALE $\frac{1}{8}$ " = 1'-0"		(8) FEEDERS 12
5 FLOORS & BASEMENT		(9) POWER BRANCH WIRING 14
(BSMT. 18,900 SQ.FT.)	TOTAL AREA	(10) POWER ADDENDA #1
1ST FLR. 18,900 "	AREA	(11) SPECIAL X-RAY EQUIP. 16
APPROX AREA	2ND FLR. 18,700 "	(12) PUBLIC TELEPHONE 17
	90,400	(13) INTER COMM. PHONES 17
	3RD FLR. 11,200 "	(14) CLOCKS 18
	50,FT.	(15) A.D.T. 19
CONSTRUCTION	{ CONC. FLRS. REM. TIN PAN	(16) TEMPORARY WIRING 20
	{ WIRE LATHE & PL. M. BOT. & AN.	(17) BOND REQUIRED 22
PENCIL NOTATIONS - NONE		ADDENDA #1
(18) INTER COMM. PHONE 23		
(19) ANNUN. SYSTEM 23		
(20) ALTERNATE BID #1 24		
— SPECIFICATIONS — "MARKED"		ON PLANS
SET #10	DATED 10-13-30	(21) PROVIDE SPECIAL COVE LTS #1
{ NO REVISION DATE	SHEETS 1 TO 22 INCL.	(22) INSTALL PIT UNDER SW. B.R.D.
ADDITIONAL NO. 1 SHEET NO. 7 DATED 11-1-30		
(1) CONDUIT - GALV	PG. 3	
(2) WIRE - 30% UNIVERSAL	PG. 3	

How a title sheet should be used. This sheet should be prepared as soon as the preliminary examination of the plans and specifications is made.

MANY men have started estimating, reached their zenith, and outlived their usefulness as estimators, without having learned the proper methods of keeping data on plans and specifications. No estimator can doubt the importance of such data, but the fact that many find the recording of it an irksome task, causes much laxity in a very critical branch of estimating.

One's anxiety to get started on the actual compiling of quantities should not cause delay in making out his so called "Title Sheet." As soon as the preliminary examination of plans and specifications is made, this sheet should be prepared.

The records of greatest value in connection with the plans are the following:

1. Set number (if any)
2. Number of sheets in set
3. Dates of sheets
4. Latest revision date (if any)
5. Scale.

The plans should be marked so that future identification will be easy. This marking should bear the name of the contracting company, the date at the time of estimating and the initials of the estimator. It will be observed that on the accompanying illustration of the title sheet there is the notation "Marked" opposite the set number.

This is the estimator's positive record that the plans have the proper markings. The importance of having plans marked is increased when there is neither a set number nor date.

If there is no revision date on the plans, the fact should be recorded, thus indicating that revision dates have not been overlooked.

In addition to the above records one should add:

6. The number of floors
7. The area of floors
8. The total floor area of the building
9. The construction of the building
10. The ceiling heights
11. Other things peculiar to the particular building.

All of these items have a direct bearing on the labor cost of the job, besides being valuable for checking the completed estimate and in compiling information for preliminary estimates on similar jobs. In many cases it is advisable to make a sketch showing the dimensions and floor layout of the building.

All other things being equal, the cost of installing electrical work is higher for buildings with the floor layouts shown in the accompanying sketch than it would be for a rectangular building of the same square feet area.

The notes on the plans which constitute part of the

more Accurate Estimates

The second of a series of articles showing a successful method of estimating which is extremely comprehensive, yet easy to check or revise. The previous article explained numerous forms necessary in preparing estimates of large or small jobs

By RAY ASHLEY

Chief Estimator and Engineer
Electrical Survey Bureau, Inc., Chicago

specifications should be listed with the regular specification notes.

Notations in acid ink, or pencil should be recorded. The estimate is at times materially affected by such markings.

Where a central bureau is figuring work or when an electrical contractor is figuring for general contractors it is in most cases advisable to figure the work in accordance with the original plans and specifications, and make up a separate estimate covering the pencil notations. The origin of such notes is sometimes very mysterious, besides there is a great variation in the way different plans on the same job are marked. An estimate based on the original plans and specifications gives a definite basis to start from.

The section of the "Title Sheet" covering the specifications should also have the set number of specifications, date, number of sheets, and a record of any revision dates. The markings for future identification should be the same as those used on the plans. All addenda should be handled in the same way.

The first reading of the specifications cannot be done too carefully. As one reads them, notes should be made as shown in the illustration of the title sheet. These notes serve two purposes, first as a means for the estimator to check his job, and secondly as an index.

Experience has shown that the estimators who have the fewest omissions are the ones who have the most carefully selected notes. The compiling of these notes should be done as soon as one has carefully examined the plans. One careful reading may suffice. By referring to his notes a person need only reread parts which the notes do not make clear.

In order to understand the specifications, it is necessary to study the plans while reading them. The items which should have been shown on the plans, but are spe-

ESTIMATE			
NO. DATE			
JOB OR BLDG.	LOCATION	SEE NO.	PHONE
ARCHITECT	ADDRESS		
ENGINEER	ADDRESS		
OWNER	BID TO ARCHITECT ENGR OWNER	SEE NO.	PHONE
BID TO BE IN BY		DATE	ADDRESS
PLANS: COST OF			
KEY NO. DATED			
SCALE			
SPECIFICATION NO.		DATE	PAGE NO.
ADDRESS NO.		INTERLINED ON PAGE	CORRECTED ON PAGE
BUILDING KIND AREA		COST OF BLDG.	COST OF FLOORS
No. OF FLOORS		DEPT.	DEPT.
SPECIFICATION REQUIREMENTS			
ITEMS	DESCRIPTION	AMOUNT	NOTES
CERTIFIED CHARGE	PLUG AND JACKS		ANNUNCIATOR SYSTEM
BOND	OUTLETS		BELL AND BUZZER SYSTEM
PRO-RATA CHARGES	LINE PANEL		NUMBER CALL
REVERSE CONNECTION PUBLIC TEL	POWER		NUMBER CALL
GENERAL	SWITCHES		NUMBER CALL
TELEPHONE	LTE FUSES		WIRELESS
DRAWDRAW	WATER SWITCHES		AUTO-CALL
CUTTING AND PASTING	PIPS		TELETYPEGRAPH
INSPECTION	WIRE		SPECIAL
STRIKES	WIRE		ALARM CIRCUITS
EXCAVATE	WIRE		FIRE
SERVICES A.C. D.C.	CONNECTING		SPRINKLERS
OVERHEAD WIRING	COVER SOCIETY		SPECIAL
120 MIN. VOLTS	DROP CABLE		DUCTPHONE
240 MIN. VOLTS	HOTELS		PHONES PUBLIC
LOCATION	WATER CO. AND FIREHOUSE		CLIQUE TYPE PRESSURE
VOLTS 120 L.T. FEEDERS	WIRE		WATER METER
L.T. BRANCHES	WIRE		WATER METER
WIRE S.G. 12-2000	REMARKS		
CONDUIT MIL. INCH			
BRANCH CTS. PER CONDUIT			
EMPTY CONDUIT			
OUTLET BOXES MIL. INCH			
OUTLET SPACES			
FLOORS			
SWITCHES			

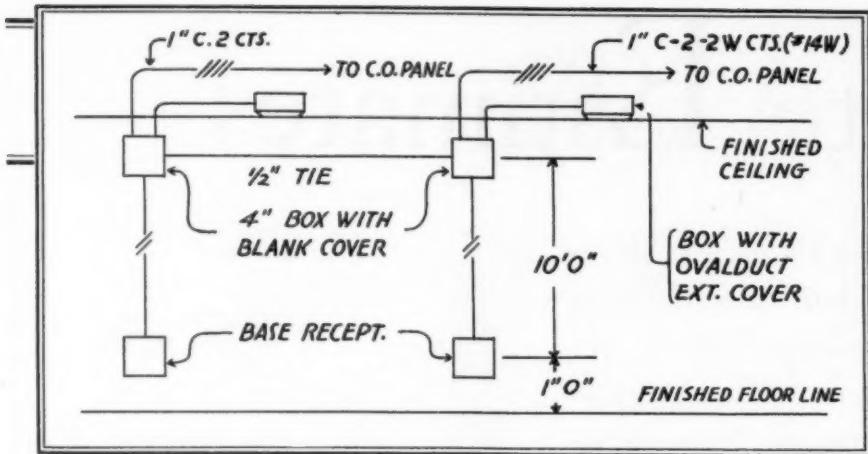
A type of form used for title sheet which is already set up for indexing equipment.

cified only, should be taken care of by making the proper notations on the plans. A specification for a store and office building may specify a 2,000 watt sign outlet over the entrance to each store; with nothing on the plan to indicate same. In such a case the estimator should mark the outlet over each store entrance and designate the proper wattage. By doing this the sign outlets will be figured with the other store outlets and not overlooked until the specification notes are checked.

It is often advantageous to look up any special equipment that is specified as the study of plans and specifications progresses. Sketches representing arrangement of equipment may also be helpful. It is to the estimator's advantage to get as much of a mental picture of the job as possible before he starts the actual estimating.

Each note should be numbered and have the paragraph or page which contains the item covered, clearly shown. It is very often helpful and advisable to put the note number on the specification. Especially if it is going to be necessary to reread that particular part, or if an important item is surrounded by superfluous wording, covering things which any contractor would take for granted.

In the accompanying illustration of a section of typical specifications, the sentence marked with (8) has a very important bearing on the estimate, but is buried in a part



Sketch showing estimator's interpretation of specifications covering the installation of two circuits per bay with a box in ceiling for future extension to outlets with ovalduct. These sketches are often helpful in getting a mental picture of the job before estimating.

of the specification where it could be easily overlooked. The marginal note uncovers this important sentence.

The important things in the notes should stand out so that they can be easily found. In making a note covering the furnishing and installing of lamps, the note should be (21) Lamps—Furnish and Install P. 14, and not (21) furnish and install lamps—P. 14.

As each part of the estimate is completed, all notes which are completely covered in that part should be checked off. If any omissions occur they may be sup-

~~plumb and at right angles to walls. There must be sufficient room for insulating joints, wires and bushings. Boxes where gas outlets are shown shall be provided with hole to allow for reception of gas piping.~~

~~All conduit must be cut square, and carefully reamed before threading. Joints must be screwed together until pipe butts in coupling. Lead all underground joints. (8) No conduit less than 3/4" inside diameter shall be installed.~~

~~Wall switches shall be of the flush toggle~~

Section of typical specifications in which an important sentence is placed where it could be easily overlooked.

plied before the estimator goes on to the next section of the job.

When the branch wiring is listed all notes pertaining to wall switches and receptacles may be checked off. The notes covering the kind of conduit and wire remain unchecked until the feeders and other branches requiring wire and conduit are listed.

It is frequently advisable to make a sketch showing the dimensions and floor layout of the building.

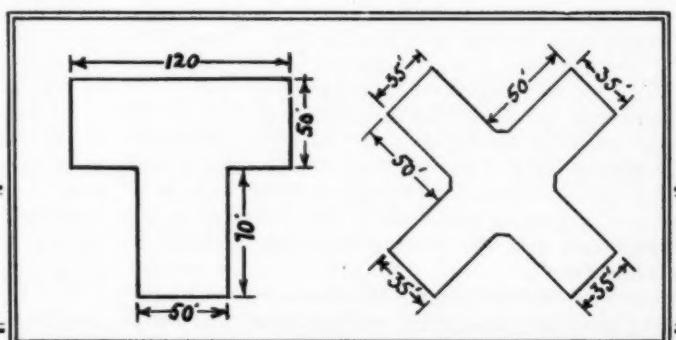
The note covering the bond is not checked until the figure is completed. By the time the entire estimate is completed all notes will be checked off.

Although these records when checked off have served their purpose in connection with the estimating, they still have great value. The time lapsing between the date when the job is figured and when the contractor is called in for negotiations may be very great. The estimator's notes will serve to refresh his memory on the work involved.

After a job is awarded one is able to use this sheet throughout the life of the contract. It is useful in the office and a copy sent to the job foreman can be used to a great advantage. It should be bound on top of the remainder of the estimate, thereby covering up all figures. If one has occasion to take his estimate out of the office, it is sometimes important to keep all figures covered. The notes should also be readily accessible.

Too much emphasis cannot be placed on the value of a good "Title Sheet" and the estimator who has confidence in his notes has confidence in the completeness of his work.

This article concludes the preliminary material in laying out an estimating system. How to handle the actual estimating of lighting branch wiring including the taking off of materials and the listing quantities will be covered in the next issue of ELECTRICAL CONTRACTING.



MOTOR Ratings

HORSEPOWER and SPEED



(Synchronous—Continued)

STANDARD horsepower and speed ratings for motors as given by the National Electrical Manufacturers' Association. Horsepower and speed ratings for small a.c. and d.c. motors and large d.c. and single-phase motors appeared in the January issue of Electrical Contracting.

LARGE POWER MOTORS

Synchronous

Standard horsepower and speed ratings for open type continuous duty general purpose, 60 cycle, synchronous motors.											
H.P. REVOLUTIONS PER MINUTE											
20	...	...	...	...	1200	1800					
25	...	...	...	...	1200	1800					
30	...	...	...	900	1200	1800					
40	...	...	720	900	1200	1800					
50	...	600	720	900	1200	1800					
60	...	600	720	900	1200	1800					
75	...	600	720	900	1200	1800					
100	514	600	720	900	1200	1800					
125	514	600	720	900	1200	1800					
150	514	600	720	900	1200	1800					
200	514	600	720	900	1200	1800					

Standard horsepower and speed ratings for 60 cycle engine type 100 per cent power factor synchronous motors for direct driving of air compressors and ammonia compressors.													
No. of Poles 60 56 52 48 44 40 36 32 28 26 24 22 20 18 16 14 H.P. REVOLUTIONS PER MINUTE													
20	...	...	300	327	360	400	450						
25	...	...	300	327	360	400	450						
30	164	180	200	225	257	277	300	327	360	400	450		
40	164	180	200	225	257	277	300	327	360	400	450		
50	164	180	200	225	257	277	300	327	360	400	450		
60	164	180	200	225	257	277	300	327	360	400	450		
75	164	180	200	225	257	277	300	327	360	400	450		
100	120	128	138	150	164	180	200	225	257	277	300	327	360
125	120	128	138	150	164	180	200	225	257	277	300	327	360
150	120	128	138	150	164	180	200	225	257	277	300	327	360
175	120	128	138	150	164	180	200	225	257	277	300	327	360
200	120	128	138	150	164	180	200	225	257	277	300	327	360
225	120	128	138	150	164	180	200	225	257	277	300	327	360
250	120	128	138	150	164	180	200	225	257	277	300	327	360
300	120	128	138	150	164	180	200	225	257	277	300	327	360
350	120	128	138	150	164	180	200	225	257	277	300	327	360
400	120	128	138	150	164	180	200	225	257	277	300	327	360
450	120	128	138	150	164	180	200	225	257	277	300	327	360
500	120	128	138	150	164	180	200	225	257	277	300	327	360
600	120	128	138	150	164	180	200	225	257	277	300	327	360
700	150	164	180										
800	150	164	180										

NOTE—Motors in the above table are to be rated at 50 deg. C. rise for continuous operation.

Standard horsepower and speed ratings for 60 cycle, engine type, 80 per cent power factor, synchronous motors for direct driving of air compressors and ammonia compressors.														
No. of Poles 72 66 60 56 52 48 44 40 36 32 28 26 24 22 20 H.P. REVOLUTIONS PER MINUTE														
100	100	120	128	138	150	164	180	200	225	257	277	300	327	360
125	100	120	128	138	150	164	180	200	225	257	277	300	327	360
150	100	120	128	138	150	164	180	200	225	257	277	300	327	360
175	100	109	120	128	138	150	164	180	200	225	257	277	300	327
200	100	109	120	128	138	150	164	180	200	225	257	277	300	327
225	100	109	120	128	138	150	164	180	200	225	257	277	300	327
250	100	109	120	128	138	150	164	180	200	225	257	277	300	327
300	100	109	120	128	138	150	164	180	200	225	257	277	300	327
350	100	109	120	128	138	150	164	180	200	225	257	277	300	327
400	100	109	120	128	138	150	164	180	200	225	257	277	300	327
450	100	109	120	128	138	150	164	180	200	225	257	277	300	327
500	100	109	120	128	138	150	164	180	200	225	257	277	300	327
600	100	109	120	128	138	150	164	180	200	225	257	277	300	327
700	100	109	120	128	138	150	164	180	200	225	257	277	300	327
800	100	109	120	128	138	150	164	180	200	225	257	277	300	327

NOTE—Motors in the above table are to be rated at 50 deg. C. rise for continuous operation.

Standard horsepower and speed ratings for 50 cycle, engine type, 100 per cent power factor synchronous motors for direct driving of air compressors and ammonia compressors.													
No. of Poles 56 52 48 44 40 36 32 28 26 24 22 20 18 16 14 H.P. REVOLUTIONS PER MINUTE													
20	...	...	...	...	1200	1800							
25	...	...	...	...	1200	1800							
30	...	...	...	900	1200	1800							
40	...	...	720	900	1200	1800							
50	...	600	720	900	1200	1800							
60	...	600	720	900	1200	1800							
75	...	600	720	900	1200	1800							
100	107	115	125	136	150	167	187	214	231	250	273	300	327
125	107	115	125	136	150	167	187	214	231	250	273	300	327
150	107	115	125	136	150	167	187	214	231	250	273	300	327
175	107	115	125	136	150	167	187	214	231	250	273	300	327
200	107	115	125	136	150	167	187	214	231	250	273	300	327
225	107	115	125	136	150	167	187	214	231	250	273	300	327
250	107	115	125	136	150	167	187	214	231	250	273	300	327
300	107	115	125	136	150	167	187	214	231	250	273	300	327
350	107	115	125	136	150	167	187	214	231	250	273	300	327
400	107	115	125	136	150	167	187	214	231	250	273	300	327
450	107	115	125	136	150	167	187	214	231	250	273	300	327
500	107	115	125	136	150	167	187	214	231	250	273	300	327
600	107	115	125	136	150	167	187	214	231	250	273	300	327
700	150	164	180										
800	150	164	180										

NOTE—Motors in the above table are to be rated at 50 deg. C. rise for continuous operation.

Standard horsepower and speed ratings for 25 cycle, engine type, 100 per cent power factor, synchronous motors for direct driving of air compressors and ammonia compressors.												
No. of Poles 30 28 26 24 22 20 18 16 14 12 10 8 6 H.P. REVOLUTIONS PER MINUTE												
20	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...	...	...	...	...
60	...	...	...	...	...	...	...	...	...	...	...	...
75	...	...	...	...	...	...	...	...	...	...	...	...
100	100	107	115	125	136	150	167	187	214	231	250	273
125	100	107	115</td									



SOLICITING REPAIR



The solicitor must be more than just a salesman. He must know motors and be thoroughly familiar with repair costs. The customer prefers to do business with a man who can set a definite price in advance for the work proposed.

Soliciting motor repair business has a definite place in the selling activities of the industrial specialist. The solicitor makes an intimate contact with the customers, finding opportunities for additional business, improving service and building customer confidence

Frequent calls on a large number of industrials and motor users is the first step in securing motor repair business. The solicitor should have a call book, in which are the names of every motor user in the territory he covers. These names can often be secured from the local power company. By furnishing him with a light delivery truck he can, when necessary, give the customer quick service in the form of pick-up and delivery. Immediate action secures many jobs.



Electrical Contracting, February, 1931

MOTOR BUSINESS

By TOM MASTERTON

*Service Solicitor
Penn Electric Repair Co.
Pittsburgh, Pa.*

Samples play an important part in getting additional business. One of the samples always carried by the solicitor is a coil with which he can demonstrate its construction and the quality of material used.



The customer likes to see that something has been done to his motor. As the actual repairs are out of sight the exterior of the motor should be cleaned and, if needed, repainted. When the solicitor delivers a nice appearing job, he is helped considerably in getting additional business.

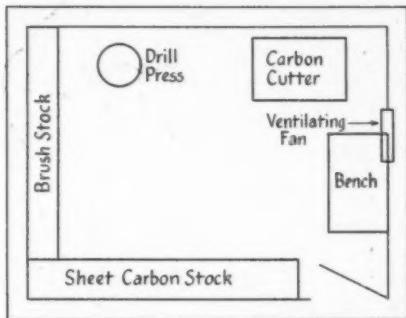


A portion of the brush stock. The room contains a complete stock of standard brushes and another set of similar bins contains a full line sheet carbon, shunts and terminals. It will be noted that everything is stocked in durable steel bins.



Carbon Brush Room

Confines Dust



Drawing showing the layout of the carbon room. This permits efficient workmanship and keeps a clean shop. One man is in charge of this room.

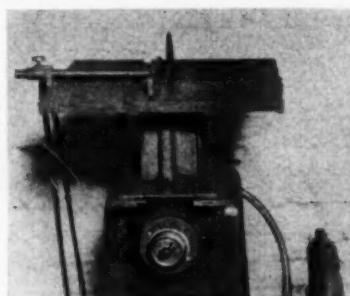


The room contains a drill for drilling special made carbon brushes.

By confining carbon brushes and stock, tools and brush making equipment in a separate room, the dust which is harmful to insulation is kept from spreading throughout the shop. This room also permits more efficient workmanship

By J. ROLAND STOLZENBACH

President, Roland Electric Company,
Baltimore, Md.



The cutter or saw table equipped with a carborundum wheel. It will be noted that this cutter is equipped with a suction fan carrying the carbon dust to a vacuum bag.



All shunts are fastened into brushes by using special tamping tools and compound. This has been found much more efficient than solder, in that it is not affected by heat.

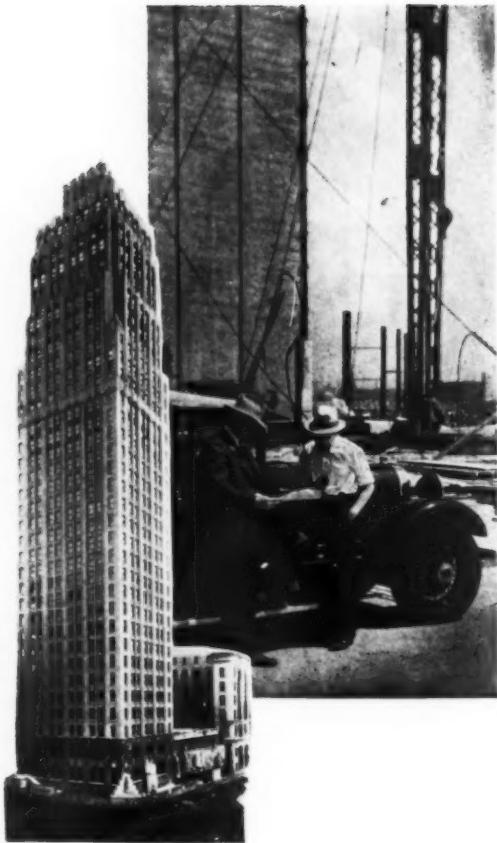
Electrical Contracting, February, 1931

facts

The statistics on these four pages present a clearer conception of the character of the electrical contracting industry than is generally held. It should inspire pride in the contractors and a new respect for the industry in the minds of others.

Electrical Contractor Population Statistics

	No. of Electrical Contractors	Population Per Contractor	Elec'l Consumers Per Contractor	Thousand K.W. Hrs. Per Contractor		No. of Electrical Contractors	Population Per Contractor	Elec'l Consumers Per Contractor	Thousand K.W. Hrs. Per Contractor
Alabama	173	15,291	1,107	9,585	Nebraska	264	5,223	915	1,887
Arizona	104	4,191	655	2,676	Nevada	44	2,067	401	1,001
Arkansas	114	16,092	1,172	1,119	New Hampshire	236	1,971	498	1,298
California	1,645	3,448	1,098	4,955	New Jersey	999	4,032	1,121	2,230
Colorado	206	5,024	1,013	2,499	New Mexico	69	6,191	473	973
Connecticut	599	2,675	698	2,126	New York	3,303	3,821	1,085	3,454
Delaware	50	4,767	867	1,057	North Carolina	299	10,603	825	3,838
Dist. of Columbia....	82	5,937	Included in Maryland		North Dakota	117	5,833	567	896
Florida	348	4,212	743	1,901	Ohio	1,029	6,452	1,487	6,072
Georgia	221	13,132	1,047	5,138	Oklahoma	287	8,334	1,042	3,404
Idaho	74	6,025	1,148	10,867	Oregon	249	3,832	942	4,561
Illinois	1,801	4,224	1,044	4,076	Pennsylvania	2,149	4,486	946	3,746
Indiana	755	4,272	909	3,221	Rhode Island	245	2,840	759	2,664
Iowa	553	4,463	833	2,639	South Carolina	102	16,983	1,168	14,289
Kansas	400	4,699	860	2,499	South Dakota	121	5,709	695	893
Kentucky	280	9,406	1,019	2,365	Tennessee	228	11,422	1,098	4,519
Louisiana	195	10,741	963	5,075	Texas	667	8,727	1,049	4,188
Maine	229	3,492	840	2,493	Utah	109	4,611	1,084	3,689
Maryland	290	5,604	1,191 <small>(inc. D.C.)</small>	6,647	Vermont	100	3,591	782	4,551
Massachusetts	1,429	2,976	833	1,859	Virginia	243	9,955	989	5,337
Michigan	1,418	3,415	779	3,127	Washington	318	4,912	1,394	7,898
Minnesota	644	3,985	736	1,550	W. Virginia	224	7,716	864	9,526
Mississippi	105	19,121	981	537	Wisconsin	1,066	2,748	582	2,129
Missouri	689	5,255	965	1,768	Wyoming	38	5,910	920	1,609
Montana	94	5,705	927	17,165	U. S. Total.....	25,004	4,907	966	3,597

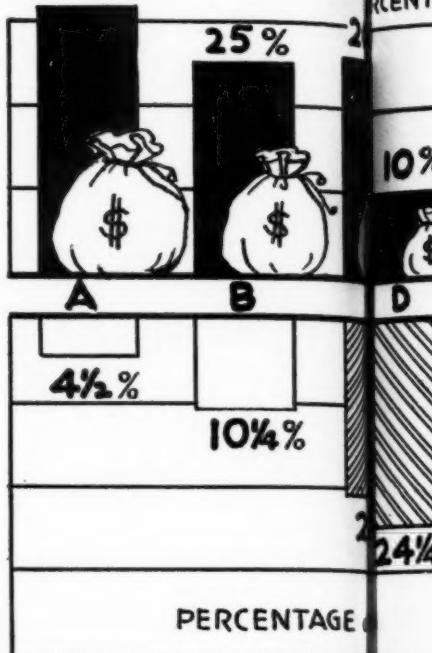


CLASS A

Annual Volume \$100,000 or over

4½% of the men do 31% of the business
1110 contractors
Average \$175,000 annual volume
They employ an average of 21 men
Office buildings, public buildings, hotels, theatres, large apartments, factories, mill, and warehouses

31%



BREAKDOWN OF THE CRA

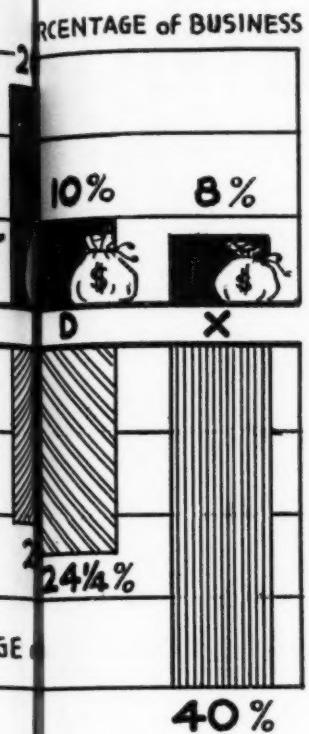
CLASS B

Annual Volume \$50,000 to \$100,000

10½% of the men do 25% of the business
2565 contractors
Average \$60,500.00 annual volume
They employ an average of 8 men
Industrial, commercial and large residential



The 25,000 electricians have been placed in five classes to show the size of business and the number of men in order to show the characteristics of the industry. This shows 80 per cent of the contractor who work in the bulk of the contracts are being done by men of business ability. The figures also show the majority of the men in Class D and X. But the men in these smaller classes will be found in the larger contractors of the country.



CLASS C

Annual Volume \$20,000 to \$50,000

21% of the men do 26% of the business
5250 contractors
Average \$30,500 annual volume
They employ an average of 4 men
Industrial, commercial (small) residential and general wiring



CONTRACTING BUSINESS

Contractors have been assessed to volume of business in much group, in the character of the work 80 percent of them do approximately 35 percent. In contractor words, the work is being done by necessity. These are the men ahead of Class D & X. From the ranks will come the leaders of tomorrow.



CLASS D

Annual Volume \$6,000 to \$20,000

24 1/4% of the men do 10% of the business
6075 contractors
Average about \$10,000
They employ 1 or 2 men
Residential, repairs and general wiring

35% New Building

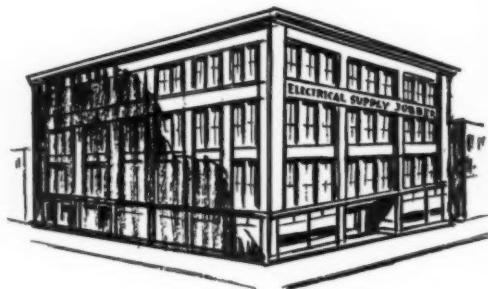
65% {

Industrial modernization
Industrial maintenance
Floodlighting
Ventilation wiring
Sound systems
Motor repair
Sign wiring

Store window lighting
Refrigeration wiring
Service station lighting
Office lighting
Signal system wiring
Street lighting

Extensions and additions
Alterations
Wiring old buildings
Additional outlets
Range wiring
Oil burner wiring
Radio wiring

Heating wiring
Decorative outdoor lighting
Farm wiring
Airport wiring
Bridge wiring
Ship wiring
Mine wiring
Fire alarms



85% of Contractors' Purchases Thru Supply Jobbers

Motor Sales, Installation and Maintenance 49%

Commercial Lighting 47%

Show Window Lighting 41%

Radio Wiring and Service 39%

Industrial Lighting 32%

General Wiring 31%

Floodlighting 29%

Electric Signs 25%

Ventilation 24%

Signalling Systems 18%

Telephone Work 15%

Residence Lighting 5%

Repair Work 3%

Specialization

A questionnaire to 3,000 contractors asking what they would like to specialize in produced the results shown graphically at the left. Below is a partial list of activities in which electrical contractors have been found to be specializing:

Motorization
Commercial lighting
Show window lighting
Radio wiring
Industrial lighting
General wiring
Floodlighting
Electric signs
Ventilation
Signal systems
Telephone work
Repair work
Industrial
Range wiring

Refrigeration
Farm wiring
Street lighting
Public address system
Marine wiring
Bridge wiring
Mine wiring
Large building wiring
Store maintenance
Hospital wiring
Apartment house wiring
Theatre wiring
School wiring
Elevator wiring

Talking movies
Oil burner wiring
Red Seal wiring
Rewiring
Garage wiring
Antenna installation
Radio interference
Appliance repairs
Filling station
Chain store wiring
Garment shop wiring
Church lighting
Outdoor sports lighting
Airport wiring

BIRMINGHAM

COOPERATES

By D. B. CLAYTON
*Secretary, Jefferson County Chapter of Electragists
 Birmingham, Ala.*

THE Jefferson County Chapter of Electragists has succeeded in getting the cooperation of the Birmingham Electric Co. in establishing a fair price schedule for installing refrigerators, ranges, heaters, fixtures and old house wiring for the utility. These final prices, which are shown in the accompanying tables, are the result of a fairly recent cooperation between the contractors and the utility and show what can be accomplished when both sides will be fair-minded and are willing to discuss openly each other's problems.

At the beginning of 1930 only one or two of the larger contractors were members of the local chapter. About the first of February the balance of the larger contractors agreed to join the local chapter in an effort to correct numerous ills that were effecting the industry as a whole in Birmingham.

On February 17 we had what might properly be called a re-organization meeting, at which time the old officers resigned and new officers were elected to take over the activities of the association. The old officers had been

COST AND SELLING PRICES TO THE BIRMINGHAM ELECTRIC CO.
 ON CAMPAIGN FIXTURES

TYPE— IVANHOE	FIRST FIXTURE		2nd, 3rd, 4th and 5th FIXTURE		6th and OVER FIXTURE	
	Cost	Selling Price	Cost	Selling Price	Cost	Selling Price
MO-633-16" Plain...	\$11.50	\$14.00	\$10.50	\$13.00	\$10.00	\$12.50
MO-587-16" Plain...	10.40	12.90	9.40	11.90	8.90	11.40
MO-741-16" Plain...	9.30	11.80	8.30	10.80	7.80	10.30
M-587-14" Plain...	9.40	11.40	8.40	10.40	7.90	9.90
M-741-14" Plain...	8.35	10.35	7.35	9.35	6.85	8.85

TYPE— GRAYBAR	FIRST FIXTURE		2nd, 3rd, 4th and 5th FIXTURE		6th and Over FIXTURE	
	Cost	Selling Price	Cost	Selling Price	Cost	Selling Price
9930-16" Susp. D-2...	\$11.00	\$13.50	\$10.00	\$12.50	\$9.50	\$12.00
9930-16" Susp. Plain...	9.30	11.80	8.30	10.80	7.80	10.30
9920-14" Susp. D-2...	9.30	11.30	8.30	10.50	7.80	9.80
9920-14" Susp. Plain...	7.95	9.95	6.95	8.95	6.45	8.45
9930-16" Cel. D-2...	10.60	13.10	9.60	12.10	9.10	11.60
9930-16" Cel. Plain...	8.95	11.45	7.95	10.45	7.45	9.95
9920-14" Cel. D-2...	8.95	10.95	7.95	9.95	7.45	9.45
9920-14" Cel. Plain...	7.50	9.50	6.50	8.50	6.00	8.00

Extra Chain and Wire, per foot..... 25c
 NOTE.—These prices include Full Switch, Installation, Inspection, carrying charge and Mazda Lamps.

ITEMS MAY BE LEFT OFF AT FOLLOWING REDUCTIONS:

300 Watt Lamp..... Deduct—\$1.25
 200 Watt Lamp..... Deduct—\$.80
 Installation and Inspection..... Deduct—3.50 (For First Fixture)
 Installation, 2nd Fixture and up..... Deduct—1.00 (For Each Fixture)
 Pull Chain Switch..... Deduct—\$.80
 500 Watt Lamp may be furnished in 16" Glassware for .75 EXTRA.

INSTALLATION PRICES TO BIRMINGHAM ELECTRIC COMPANY
 FROM JEFFERSON COUNTY CHAPTER ASSOCIATION OF
 ELECTRAGISTS.

Refrigerators, Ranges, Heaters:

Range with new type switch now required and 60 ampere service....	\$50.00
Range with new type switch now required and 100 ampere service....	60.00
Water heater, in addition to range, protected by cutouts only.....	20.00
Double throw 60 ampere switch with the range and water heater....	12.00
Meter loop only for refrigerator where two meters are to be used....	11.00
Meter loop and refrigerator receptacle on separate circuit.....	18.00
Circuit and receptacle for refrigerator on present meter.....	9.00

Fixture Hanging:

Hanging Fixtures on existing outlets, first fixture.....	\$2.50
Each additional fixture.....	1.00
Pull chain switch in the canopy of fixture.....	.80
Additional chain, per foot.....	.25
Extension of wiring for outlet, per foot.....	.50
Outlet box installed in present circuit.....	.50
Inspection	1.00

Old House Wiring in One-Story House:

With new type switch and house to be wired in BX:	
Two drops with meter loop.....	\$22.00
Three drops with meter loop.....	25.00
Four drops with meter loop.....	28.00
Five drops with meter loop.....	31.00
Each additional ceiling outlet.....	3.00
Wall switches, each.....	3.00
Convenience outlet, each.....	3.00
Meter loop only.....	11.00
Hanging fixtures, each.....	1.00
Inspection 1 to 20 fixtures.....	1.00

in touch with our national headquarters in an effort to have some understanding brought about between the local chapter and the Birmingham Electric Co., who, at that time, were installing all of the larger appliances that they sold, together with fixtures and other similar appliances and apparatus.

So, at this time, the utility asked for a meeting with the contractors to find out what they wanted. This committee reported back to the association and their report gave us the basis of working out with the Birmingham Electric Co. prices to be used until July 1, 1930. These prices were unit prices, at which the association agreed to handle the installation work of the Birmingham Electric Co., or such parts of it as they gave us.

As soon as this activity was under way, we arrived at a unit price on lighting fixtures, which the Birmingham Electric Co. were selling, in order that orders for these fixtures might be turned over to the contractors, allowing them to purchase and install the fixtures, rather than the previous arrangement we had which covered

(Continued on page 108)

Opportunities Telephone and

AIRPORTS

Interior telephone system for Office, Waiting Room, Radio office, Hangar, Repair department, and Control tower.

Call system

Public telephone conduit system

Telegraph conduit system

Watchman's recording system

Fire alarm system

Clock system

APARTMENT HOUSES

Interior telephone system for Office, Suites, Janitor, Laundry, Trade door, and Lobby.

Annunciator system

Mail-box system

Speaking tube system

Public telephone conduit system

Elevator telephone system

Elevator signal system

Clock system

Door openers

Fire alarm system

Watchman's recording system

BANKS

Interior telephone system for Offices, Officials' desks, Tellers' cages, Information, Vault and Clerical departments.

Telegraphic writing system for Tellers' cages, Accounting department, and Filing departments.

Clock system for Bank lobby, Offices, Vault, and Clerical departments.

Emergency alarm system

Guards' call system

Watchman's recorder system

Coupon booth system

Fire alarm system

Automatic vault and building alarm system

Annunciator and code call system

Public telephone conduit system

Telegraph conduit system

CHURCH

Signal system

Automatic fire alarm system

F FARMS

Automatic burglar alarm system

Fire alarm system

No voltage alarm system

Brooder and incubator temperature protection system

GARAGES

Interior telephone system for Office, Storage department, Repair department, and Washing department.

Fire alarm system

Public telephone conduit system

Watchman's recording system

Call system

Although older than wiring for light, heat, and power, telephone and signal work has gradually been taking a large secondary place with the contractor. This is in spite of the fact that many first electrical contractors, were best hangers. This work, however, often goes to contractors who would specialize in it one of the most profitable.

HOSPITALS

Interior telephone system for Head nurses' office, Nurses' quarters, Doctors' offices, Clinic headquarters, Operating rooms, and Service departments.

Nurses' call system

Elapsed time recorder

Doctors' call system

In-and-out systems

Fire alarm system

Watchman's recorder system

Public telephone conduit system

Telegraph conduit system

Clock system

Elevator signal system

Elevator telephone system

INDUSTRIAL PLANTS

Indicating systems for Rheostats, Turbine governors, Water-tanks, Lift bridges, Turn-tables, Gates or valves, Elevators, Conveyors, Gas tanks, Hoists, Controllers, Voltage regulator rotors, Frequency changer stators, Furnace charge regulation, Heat registering, and Overload indication.

Signalling systems for Start and stop to switchboard, Switchboard to generator room, Steel mill furnaces to blower room, Grain elevator distribution systems, and Crane and derrick control.

Clock system for Office, Plant superintendents' offices and Time-keepers' offices.

Interior telephone system for Executive offices, Superintendents' offices, Foremen's desks, Cranes, Production control departments, Shipping room, Testing laboratories, Emergency hospital, and Purchasing department.

Automatic burglar alarm system for Stock-room, Vaults, Die storeroom, Chemical laboratories, and Research department.

Telegraphic writing system for Office, Production control departments, and Shipping departments.

Fire alarm system

Watchman's recording system

Call system

Public telephone conduit system

Telegraph conduit system

Let's Specialize in Signal Wiring

or opportunities of the industry. There is not a city that does not present a large number of prospects. In order to show the size of the opportunity and its diversity, there are listed below applications of telephone and signal wiring that might be sold by the contractor in most every city in the country.—Editors.



HOTELS AND CLUBS

Interior telephone system for Office, Restaurant, Kitchen, Janitor, Bell captain, Valet, Laundry, and Power clocks.
Clock system for Office, Lobby, Guest rooms, Restaurant, and Halls.
Emergency alarm system for Cashier and Office.
Automatic alarm system for Vault.
Telegraphic writing system for Paging, Office, and Service departments.
Watchman's recording system
Fire alarm system
Elevator telephone system
Elevator signal system
Annunciator system
Public telephone conduit system
Telegraph conduit system

OFFICES

Interior telephone system for Executives, Sales department, Credit department, Auditing department, Advertising department, and Clerical departments.
Telegraphic writing system for Telephone operator, Accounting department, Filing department, and Credit department.
Call system (annunciator or telephone)
Public telephone conduit system
Automatic vault alarm system
Clock system
Brokers' automatic stock quotation board

OFFICE BUILDINGS

Interior telephone system for Office, Service departments, and Engine room.
Elevator signal system
Elevator telephone system
Public telephone conduit system
Telegraph conduit system
Clock system
Fire alarm system
Watchman's recording system

RESIDENCES

Interior telephone system for Library, Chambers, Kitchen, Chauffeur, Stables, Gardener, and Gate-men.
Annunciator systems
Door bell system
Public telephone conduit system
Automatic burglar alarm system
Automatic fire alarm system

RESTAURANTS

Interior telephone system
Signal system
Public telephone system
Fire alarm system
Annunciator call system

SCHOOLS

Interior telephone system for Office, Instruction departments, Library, Engineer, Janitor, Study rooms, Auditoriums, and Gymnasium.
Clock system for Classrooms, Halls, Offices, Auditorium, Gymnasium, Library, and Study rooms.
Program system
Fire alarm system
Instructor call system
Watchman's recording system
Public telephone conduit system

STORES

Interior telephone system for Offices, Sales departments, Shipping department, Information departments, Stock-room, Credit department, and Advertising department.
Annunciator call system for Offices, Sales floors, Shipping department, and Stock-room.
Visual signaling system for Parcel checking room, and Shipping department.
Elevator signal system
Elevator telephone system
Public telephone conduit system
Telegraph conduit system
Automatic alarm system
Fire alarm system
Clock system
Watchman's recording system

THEATRES

Interior telephone system for Offices, Ushers, Cashier, Stage, Projection booth, Engineer, and Dressing rooms.
Usher signal system
Seat occupancy signal system
Stage signal system
Public telephone conduit system
Fire alarm system
Emergency alarm system
Clock system for Offices, Lobby, and Stage.

Electrical Contracting

With which is incorporated The Electragist

S. B. WILLIAMS, Editor

Ordinances Protect Public Only

EVERY so often an attempt is made to pass licensing legislation for the protection of those now in the business. In one city recently an ordinance was proposed which would license contractors to do only certain classes of work and jobs of a certain size.

Now, it is true that a man who has been doing house-wiring is hardly equipped to handle a \$50,000 wiring job. To say, however, that he cannot legally do such work is not right.

The law is set up to protect the public safety. If the house-wiring contractor can persuade a customer to let him have an office building job, the law cannot protect the individual customer against inefficiency. It will, through inspection, protect the customer against dangerous work and that is as far as it can go.

Ordinances, such as the one mentioned, are set up as a rule to build a fence around certain classes of work for the benefit of those now in the business. This is distinctly contrary to the principles of American government and, even if passed, can never be enforced.

Contractors have a legitimate weapon for use against the fellow who would grow too fast and try to get into a class of work that he is not equipped to handle. They can insist on rigid inspection and they can urge the customer to demand a satisfactory guarantee of performance. If the small contractor can satisfy the inspector and can fulfill the guarantee then he may not legally be debarred from trying for the business.

Again let us point out that licensing ordinances are enacted as a public protection and not to protect the business of the contractor.

Code Revision

THE National Electrical Code is up for revision again this month. A great many minor changes have been proposed and a few rather important ones. The most notable trend in the proposed changes is that toward recognition of lower cost wiring methods.

It is proposed that a new section be added on non-metallic surface extensions. This new wiring method uses a 2-wire assembly with fittings, which is attached to the wall or baseboard by means of tacks. Its purpose is to supplant flexible cord in supplying additional outlets served from a convenience outlet. In setting up the proposed rules it is provided that no extension be more than 20 ft.; nor have more than 3 receptacles, provided the total outlets on the branch circuit including those on the extension are not over 12. The committee is divided on the report, three members submitting a detailed minority report objecting to Code recognition of the method.

Electric metallic tubing, or thin wall conduit, which so far has been permitted only for exposed work is now proposed for concealed work provided water-tight fittings are employed. If this amendment is accepted, it will mean the extension of the use of this material to almost every class of work.

It is also proposed that less expensive services be permitted through the use of multiple conductor cable.

Recognition of overhead duct systems is proposed. Rules for this class of work have been greatly needed.

The Profit in Range Wiring

THE promotion of electric cooking is going to receive quite a boost this year from the utilities. This will provide additional profitable wiring business for the contractor provided it is handled properly.

As we said last month, it will be a mistake for a utility in such a campaign to attempt to parcel out the range wiring business to all of the contractors. There will be so little of it for any one contractor that the work will be unprofitable unless a larger price is charged than the utility is willing to pay.

Let a few contractors have all of this work and they will be able to do it in the most economical manner and make a profit.

If it is not done this way by consent of the contractors, it will sooner or later drift into the hands of a few incompetents who will take the work at ridiculously low figures.

Isn't it better to keep the business in the hands of the worthwhile contractors?

He Didn't Know It Was Loaded

ALMOST every day we read in the paper of a shooting by somebody who "didn't know it was loaded." It just seems as though people would not learn.

It may appear to be a long jump from firearms to overhead but the thought is the same. When a fellow goes into business he is dealing with something that is loaded—all the time.

The fellow who does not know and understand that every expense must come out of the business is liable to wake up some day to find his business staggering from the effects of a load of overhead—which he did not even suspect existed.

There's a whole lot more to the contracting business than labor and materials. The cost of the automobile, whether it is used in the business or not, has to come out of the till. The same is true of the telephone and the rent and the living expenses.

In other words, everything the contractor spends must come out of the business. That's the small fellow's overhead. He pays himself no salary but lives from the till. Will his business carry that overhead? If it cannot he better increase his income or cut his scheme of living.

If the little fellows working out of their homes, who claim to have no overhead, would only look at their business in this manner, they might get a different and much more helpful conception of things.

Official Code Interpretations

ATTENTION of our readers is drawn to the official interpretations which appear from time to time in our Code Chats department. These interpretations of the National Electrical Code are made by an interpretations committee of the Electrical Committee, N. F. P. A., and as such should be recognized by all Code users as the "last word."

Official interpretations are made only upon request and are for the purpose of making clear some point or points in the Code. No interpretation is hastily made, but represents the judgment of those men who, by virtue of their Electrical Committee experience, are in the best position to say what a certain rule actually means.

The National Electrical Code is not perfect, nor is it always clear, and for that reason, it is not surprising that there shall arise honest differences of opinion regarding certain rules. Until the interpretation's committee was set up there was no way of settling such differences except by court action, and that is seldom advisable.

The demand for official interpretations is apparently growing. That is a good thing, for the more interpretations we have the faster will the debatable points be cleared up and the sooner will the understanding of the Code become uniform.

Another Busted Truism

IF one were to ask one hundred representative members of the electrical industry if the electrical contractor was a salesman, the answer would be almost 100 percent "No."

Isn't it strange how often commonly accepted truths are false?

When an industry grows to twenty-five thousand business units there is only one way for the individual concern to survive, and that is by selling. Price-cutting is not the road to profit.

Thousands of electrical contractors have built substantial businesses and have laid aside some money. This couldn't be done if all or even a major portion of the competition was price—if all the contractor did was to wait for work to come his way and then quote a price.

Field editors on ELECTRICAL CONTRACTING have been studying the selling habits of contractors and they have been amazed at the studious and oftentimes ingenious ways in which contractors are creating, stimulating and building business. A number of such activities are reported in this issue. Others will follow in succeeding issues.

It is our hope that by reporting these activities we may help other contractors to broaden their selling efforts and at the same time to create in the industry a truer impression of the business.

Code Chats

Conducted by F. N. M. SQUIRES

Assistant Chief Inspector, N. Y. Board of Fire Underwriters

Wires to Swinging Signs

QUESTION: When installing a sign at right angle to the building the supports making it possible for the sign to swing, how should the circuit wires leading to the sign be installed?

ANSWER: Signs having any appreciable area to present to wind strain should be so hung that they may swing in order that the wind may be harmlessly spilled from its surfaces. Many a glass panel has been broken or even supports ripped away by the wind pressure, where signs have been rigidly supported and the trouble has been eliminated when the sign was allowed to give to the strain.

This, of course, means that we must provide wiring which will not be injured by the movement. In order that the wires may be subjected

only to the minimum of motion they should be run out on the rigger from which the sign swings, and then drop down to the sign. Open wires, while lending themselves admirably because of their flexibility especially when wound in the old fashioned helices, are not to be recommended because of several other hazards involved.

Rigid conduit, while best for rigidly supported signs, does not fit into this scheme at all. We are left with flexible conduit and armored cable as our wiring means.

According to the Code, armored cable if used should be lead covered. However, some inspection authorities have had so much trouble with the lead that they prefer the ordinary armored cable. In fact, the regular armored cable well painted with asphaltum paint makes a very satisfactory job, but before deviating from the Code in this respect the inspection authority having jurisdiction should be consulted. Also cable having stranded conductors should preferably be used and the cable must be strapped to the sign ahead of the outlet fitting. The same argument holds for flexible metallic conduit.

A Monthly Discussion of Wiring Practice and Questions of Interpretation, Presented with a View Toward Encouraging a Better Understanding of the National Electrical Code

'Miscellaneous' heading. On page 125 of the April, 1930, List you will find The Johns-Manville Corp.'s Home Insulation; and on page 219, you will find the United States Gypsum Co.'s Thermofill mentioned."

Common Neutral

QUESTION: "We wire up small residences here quite frequently where two, three and four circuits only are necessary and the utility company does not run three wires to homes of this kind but two wires only, one of which, of course, is grounded. We would like to know if the Underwriters Rules allow a common neutral for the grounded side, in case only a 110 volt circuit enters the house. We understand



BRINGS SHOP TO PUBLIC:—Roland Stolzenbach, president of the Roland Electric Co., Baltimore, recently had one of his men wind motors in his display window. Thousands of people stopped during the day to watch the work and the stunt proved to be good advertising.

Thermal Insulation of Houses

What types of thermal insulation is now approved as per 502-j? What list of approved materials would such material be listed in?

This question was referred to Underwriters' Laboratories who answered as follows:

"Thermal insulation which has been tested and found suitable for use under the conditions outlined in 502-j of the Code is listed by us in the Electrical List under the general



BUILD UP INDUSTRIAL BUSINESS QUICKLY:—Although Cy Dueweke (left) and his partner, Jos. H. Heckinger, Detroit, Mich., have been doing industrial wiring for a long time, they have made unusual strides in the past three years. They have concentrated on keeping the same customers and adding to the list by recommendations.

Electrical Contracting, February, 1931



You Wouldn't Hang on a Safety Valve!

Of course not! It would be folly to keep a steam safety valve from blowing off steam when the safety factor cries for relief from excessive steam pressure.

Just so with a fuse! When an excessive and continual overload cries for relief, the fuse should blow at the "proper time"—when the safety factor is reached.

Retarding the blow beyond the point of safety, by means of doubling up fuse links or over-done Time Lag in

fuses, will result in burnt casings and damage to equipment.

SUPERIOR TIME LAG in TRICO fuses is safe, accurate and dependable. It is the product of exhaustive engineering, infinite care in construction, and 13 years of actual experiences in the field. TRICO is a TRUE Time Lag Fuse!

Superior Time Lag

Originated and
Pioneered by
TRICO for 13 Years

Money-Saving Factors

- No Premature Blowings
- No Unnecessary Shutdowns
- No Oxidized Contacts
- No Charred Casings
- Copper-to-Copper Contacts
- Reduced Watt Loss
- SUPERIOR TIME LAG**

To secure these money-saving factors the TRICO renewal element is designed with the thought of performance in mind rather than interchangeability of links. The practical buyer prefers performance.

*And They Cost No More
Than Other Makes of
Renewable Fuses*

TRICO FUSE MFG. CO., 1007 McKinley Ave., Milwaukee, Wis.

TRICO
REG. U. S. PAT. OFF.

"Powder-Packed"

FUSES

RENEWABLE FUSES
Built-in Money-Saving Factors.
Fundamentally Correct.

FUSE PULLERS
For safe pulling of Fuses. Genuine
shock-proof horn fibre. 4 sizes.

KLIPLOK
CLAMP FOR FUSE CLIPS
Reduces Resistance, Preserves Clips
and Fuses. Sizes to fit all Clips.

COLORTOP PLUG FUSES
Tells instantly the capacity of a Fuse
by its colors. 6 distinct colors.

NON-RENEWABLE FUSES
Built for service, not
down to a price.

**THEY PUT IN JOBS THAT LAST:**

—A. D. McConnell (left) and F. C. Bragg, of the Electric Construction Co., Little Rock, Ark., long ago adopted the slogan: "Lifetime Wiring." As the firm began in 1887, the customers have had plenty of time to kick, but all seem satisfied. This firm is now established in a fine new home at Eighth and Main streets, directly across from the old place.

from the 'Code Chats' on page 22, your issue of May, 1930, that three wire circuits may use a common neutral of the proper size, for all parts of the house, but we are not sure if a common neutral can be used for a two wire circuit, or if it is necessary that pairs be run to the branch cutouts at the meter. The entering switch is not fused for the neutral, so it is a solid connection throughout."

ANSWER: If a house is supplied with 110 volts through a 2 wire service, the circuits throughout the house should all be 2 wire. Under the old obsolete rule of not over a 660 watt load allowance on a circuit, there would be no particular harm in using a common neutral for two circuits from a 2 wire service as the neutral would only be subjected to a total load of not over 12 amperes and this would not overload the No. 14 circuit wire used as the neutral. But, with the present rule which in effect allows a load of 15 amperes on a branch circuit, two such circuits using a common neutral might result in a load of 30 amperes being impressed on the neutral, which of course would seriously overload it.

This overloading would, of course, be overcome by using a No. 8 wire for the neutral, but this sort of a circuit (using a No. 14 for one of the wires for one of the circuits, and

another No. 14 for the other circuit, and then No. 8 for a neutral common to both circuits) does not meet with the approval of many inspection authorities and probably is very unlikely to be used on account of the cost, as it would be cheaper to use 4 No. 14 wires for the two circuits.

Note also that rule 613-e is under the heading of 613—"Demand Calculations for Feeder Sizes."

A common neutral should only be used on systems designed for its use, such as the "Edison" 3 wire 110-220 volt system, the 4 wire 3 phase system, etc., and should not be used on a 2 wire system or service.

Where a common neutral is permitted and is used, care should be taken to see that it will be of sufficient capacity to carry the maximum load to which it may be subjected.

Also, in all cases where a common neutral (or any neutral for that matter) is used, it must be within the same armor or conduit with the wires with which it serves. This last statement refers to metal clad jobs only.

Across the Line Switch Rules

An explanation of rule 808-h has been requested and the question raised as to why manufacturers of "Across the line" push button magnetic switches print this rule on the inside of the cover of their devices.

Rule 808-h has for its subject "Motor running protective devices" and simply says that these may be shunted or cut out of the circuit during the starting period of the motor, providing, of course, other conditions have been complied with. To make these conditions come within previous rules percentages of 500 and 750 are mentioned. That is, if next back on the line there are other protective devices rated or set at 150 per cent, or 200 per cent, or 250 per cent, or 300 per cent of the motor name plate rating, then surely the 500 per cent or 750 per cent required in 808-h has been complied with and the "motor running protective device" may be shunted out during the starting period.

But 808-h does not supersede nor modify 808-a and we must comply with 808-a, which says that "the following tables (pp 111 to 118) shall govern . . . the maximum allowable rating of the protective devices to be used in the circuit." The percentages shown on the middle of page

109 (Sect. 808-a) merely explain from what the tables were derived.

The manufacturers probably quote 808-h as it seems to be the only one they can print showing permission granted by the Code for the use of connections employed in their devices. But this should not be taken to indicate that the Code permits protecting a motor or its circuit at 500 per cent of the motor rating.

Wires of Different Systems**OFFICIAL INTERPRETATION 57**

QUESTION: A 440-volt, 3-phase, 60 cycle induction motor is supplied through a line contactor which is controlled from a remote location by a push button station. Also located at the station is an ammeter supplied by a current transformer located at the contactor. Are the two sets of conductors to the push button station and to the ammeter, respectively, to be regarded as "wires of different systems" within the intent of paragraph (n) of section 503?

FINDING: No.

Location of Dimmer in Circuit**OFFICIAL INTERPRETATION 60**

QUESTION: Does paragraph (c) of section 3904 of the 1930 edition of the National Electrical Code permit placing a dimmer in a grounded circuit wire when a single pole circuit switch is installed in the ungrounded wire to control the circuit?

FINDING: Yes. The dimmer is not to be regarded as serving the function of a switch unless it is provided with a completely off open circuit position.



COMMERCIAL LIGHTING SPECIALIST GETS LARGE NUMBER OF STORE JOBS:—Bert Simon, of the Simon Electric Supply Company, Buffalo, concentrates on commercial lighting. He employs salesmen and follows up leads in a manner which gives him a distinct advantage. Of all the new store installations on Main Street, downtown, in the past two years he has done 80%. In the month of October he was so busy he had to put on several extra men.

Distinctive Outlets for RADIO Convenience Wiring

No. 135—For Loud Speaker Connections:
 Brass \$1.00
 Bakelite 1.10

No. 136—Aerial and Ground:
 Brass \$1.00
 Bakelite 1.10

No. 131—Volume Control:
 Brass \$2.75
 Bakelite 2.85

*No. 241—Aerial and Ground and A. C. Connections:
 Brass \$2.00
 Bakelite 2.20

*No. 242—Loud Speaker and A. C. Connections:
 Brass \$3.00
 Bakelite 2.20

*No. 339—Loud Speaker, Aerial and Ground, A. C. Connections:
 Brass \$3.00

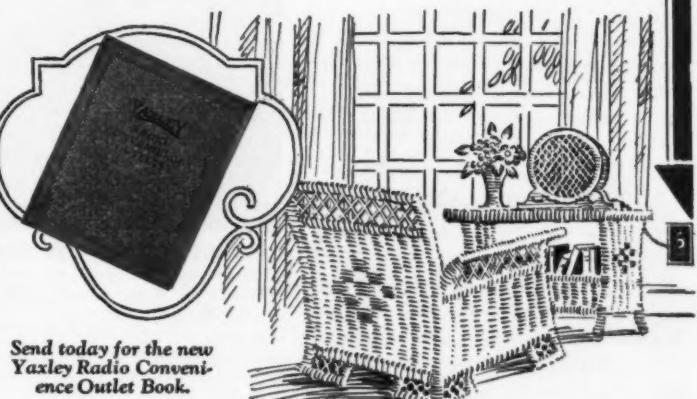
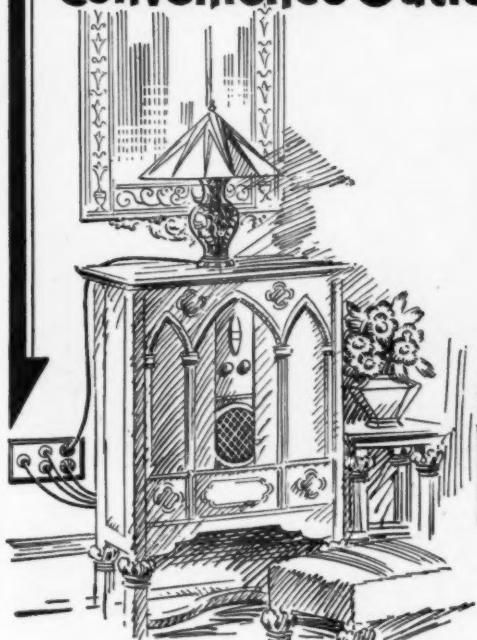
**Yaxley Radio Convenience Outlets with duplex electrical receptacles are Listed as Standard by Underwriters' Laboratories.*



Special plates in any finish desired; with individual decorations and markings for exclusive hotel installations.

YAXLEY
APPROVED RADIO PRODUCTS

Radio Convenience Outlets



Send today for the new Yaxley Radio Convenience Outlet Book.

You cannot meet the modern requirements of radio convenience wiring unless you have outlets to fit the specific needs of each installation. Yaxley outlets, for every radio requirement, are designed and built to serve the exacting demands of radio wiring in terms of standard electrical installation.

Yaxley Radio Convenience Outlets are made by a radio parts manufacturer to meet the critical requirements of radio reproduction, extension and control, with the same fine precision that has made Yaxley Approved Radio Products the choice of discriminating set builders for the vital parts of their most successful receivers. They are the electrical contractor's assurance of customer satisfaction in service, and economy and profit in installation.

YAXLEY MFG. CO.

Dept. E, 1528 W. Adams St.

Chicago, Ill.

A. E. I.

NEWS and SERVICE INFORMATION

Material for this department is supplied by the headquarters staff of the Association of Electragists, International, 420 Lexington Avenue, New York, N. Y.

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Vice President, EARL N. PEAK
1603 West Main Street, Marshalltown, Iowa

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Eastern

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Brooklyn, N. Y.

Southern

J. A. FOWLER
118 Monroe Ave.
Memphis, Tenn.

Southeastern

W. W. INGALLS
315 S.W. 10th Ave.
Miami, Florida

Great Lakes

E. D. BROWN
2470 Grand River
Ave., Detroit, Mich.

Central

E. T. LANGFORD
511 S. Third St.
Minneapolis, Minn.

Mountain

R. R. REID
35 Post Office Pl.
Salt Lake City, U. S.

Pacific

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639 Mission St.
San Francisco, Cal.

Eastern Canadian

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Toronto, Ont.

Western Canadian

J. H. SCHUMACHER
344 Main Street
Winnipeg, Man.

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New York City

General Manager

LAURENCE W. DAVIS
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New York City

Ass't to Gen'l Mgr.

HOBERT W. BARNES
420 Lexington Ave.
New York City

Executive Committee to Meet in Kansas City

Members of the A.E.I. executive committee have been advised that President Mayer has selected Kansas City, Mo., for the committee's semi-annual meeting on March 16 and 17. Morning and afternoon sessions are scheduled for each day, the opening session convening March 16 at the Hotel President, the committee's headquarters.

Letters from Harry E. Evans, president of the Greater Kansas City Chapter of Electragists, and from the directors of the Electric and Radio Association of Kansas City extend a cordial welcome and assure every assistance and courtesy to the visiting committeemen. Special arrangements for their entertainment are being planned.

It is also announced that this occasion will be taken for holding a general district meeting of the electrical contractors of Kansas City and surrounding territory on March 17.

des); directors, J. H. McLain (Mission), J. W. Martin (McAllen), David Wilson (Donna).

The Hidalgo County Chapter is one of a number of A. E. I. chapters supported by members from smaller cities and towns in one or more counties. Such chapters are especially valuable in bringing together in one organization several electragists who otherwise would have only in-

frequent opportunity for meeting and developing co-operative activities.

The newly elected officers for the Detroit Chapter, A.E.I. for the year 1931 are as follows: president, E. D. Brown, McCleary-Harmon Electric Company; vice-president, Ed. Jarcho, Miller-Seldon Co.; treasurer, W. D. Gale; secretary-manager, C. C. Cadwallader.

Electragists Represented in Code-Making Body

Electragist chapters desiring recommendations for changes in the National Electrical Code to be submitted for consideration by the electrical committee, N.F.P.A. at its meeting in New York City, February 18, 19 and 20 should communicate their recommendations promptly to the headquarters office. Such communications can then be allocated to A.E.I. representatives on the electrical committee who are serving on the article sub-committees by whom, under electrical committee procedure, recommendations are first considered.

A.E.I. representation on the electrical committee affords a continuous point of contact between electragists and the other groups responsible through that body for development of the Code. The influence of



NEW OFFICERS FOR RACINE CHAPTER:—Above are shown the 1931 officers and members of the Racine (Wis.) Chapter of Electragists, who recently held their annual meeting. Left to right, standing: R. R. Oxholm; F. H. Patrick, secretary; Frank Mitzen; A. E. Rood; LeRoy Hess; A. G. Slaisted, vice-president; R. N. Miller and A. C. Larsen, president. Middle row, seated, left to right: M. H. Schultz; T. M. Christensen; O. Christensen; R. E. Le Cointe; J. J. Small, treasurer and Hans M. Jensen. Front row, left to right: Irving Jensen and R. J. Bohm.

New Chapter Officers

Officers of the Hidalgo County Chapter (Texas) for 1931 were elected at the chapter's annual meeting as follows: president, W. F. Wortham (Weslaco); vice-president, J. W. Davis (McAllen); secretary and treasurer, H. L. Scott (Merce-



The Paulsen Medical Dental Bldg., Spokane, Washington, whose electrical wiring is armoured for permanence by Youngstown-Buckeye Conduit.

Architect—G. ALBIN PEHRSON—Spokane

Engineer—E.L. WEBBER—Spokane

General Contractor—ROUNDS-CLIST CO.—Spokane

Electrical Contractor—BROWN-JOHNSON CO.—Spokane

Conduit Leadership

The true worth of leadership is readily apparent in these days when values are

being so closely watched. More money is being spent for those products whose value and quality are known quantities—and in electrical conduit, Youngstown Buckeye continues to lead all others by a wide margin.

Contractors and engineers the country over know that Youngstown Buckeye Conduit is a sound investment. They know that it saves time and money in installing; that it affords permanent protection; and that it costs no more than ordinary rigid steel conduits.

Use Youngstown Buckeye Conduit on your next job and see for yourself just how it saves installation time on the job. You will find Youngstown products handled by leading jobbers everywhere.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

General Offices: YOUNGSTOWN, OHIO

DISTRICT SALES OFFICES:

ATLANTA . . . Hesley Building
BOSTON . . . Chamber of Commerce Building
BUFFALO . . . Liberty Bank Building
CHICAGO . . . Conway Building
CINCINNATI . . . Union Trust Bldg.
CLEVELAND . . . Terminal Tower Bldg.
DALLAS . . . Magnolia Building

DENVER . . . Continental Oil Bldg.
DETROIT . . . Fisher Building
KANSAS CITY, MO. . . Commerce Building
LOS ANGELES . . . 3000 Santa Fe Ave.
MEMPHIS . . . 42 Keel Avenue
MINNEAPOLIS . . . Andrus Bldg.
NEW ORLEANS . . . Hibernia Bldg.

NEW YORK . . . 30 Church Street
Hudson Terminal Building
PHILADELPHIA . . . Franklin Trust Building
PITTSBURGH . . . Oliver Building
SAN FRANCISCO . . . 55 New Montgomery Street
SEATTLE . . . Central Building

ST. LOUIS . . . Louderman Bldg.
YOUNGSTOWN . . . Stambaugh Building

LONDON REPRESENTATIVE
The Youngstown Steel Products Company, Dashwood House, Old Broad Street, London, E. C. Eng.

GALVANIZED SHEETS PROTECT • SAVE WITH STEEL



HEADS CHICAGO MOTOR SPECIALISTS:—For the past two years, S. A. Hohman of Hohman & Hill Co., Chicago, has been president of the Chicago Motor Specialists' Group of the Association of Electragists.

the Code in maintaining standards of safe wiring practice is of fundamental importance to contractors. Therefore, they should use this opportunity for suggesting Code changes based upon local field experience.

Representatives of the A.E.I. on the electrical committee, N.F.P.A. are Allan Coggeshall of New York and A. C. Brueckmann of Baltimore, with Robert A. Goeller, of New York and Earl N. Peak, of Marshalltown, as alternates, each of whom serve on several article committees. Mr. Coggeshall is also a member of the electrical committee's correlating committee, which meets prior to the electrical committee meeting to review reports of the article sub-committees and otherwise facilitate action of the electrical committee on pending matters.

Amendments to A. E. I. Constitution and By-Laws

Amendments to the A.E.I. Constitution and By-Laws drafted to further clarify the relationships between the A.E.I. and its local chapters and members have been submitted to the membership for vote by mail ballot. This membership vote will be the basis for their ratification or other action taken at a special general meeting of the association which President Mayer has called to be held in Kansas City on March 17, concurrently with the ex-

ecutive committee meeting. The general meeting will be open to accredited chapter delegates and other members who can attend.

During the two years the chapter organization plan has been in effect there has been opportunity to study its operation closely and to gain a practical knowledge of situations which might arise regarding local chapter A.E.I. relationships and rights of members who also have become members of chapters. With this experience it is felt that modification of the existing provisions relating to chapters and chapter members, to embody the definite requirements set forth in the form of application for charter, should be given effect at this time.

In the proposed amendments Article X of the Constitution has been expanded in greater detail, and a new Article XIII has been substituted for Section 3 of Article XI of the By-Laws, establishing specifically the jurisdictional relationships of chapters and members in the chapter territories.

New Chapter in Texas

Electragists of San Angelo, Texas have been granted a charter as the San Angelo Chapter, A.E.I., R. F. Bullock, 24 So. Chadbourne St., has been elected president and L. F. Heitzler, 5 So. Chadbourne, secretary.

Motor and Generator Standards Available

Following announcement to A.E.I. motor specialists of the new N. E. M. A. motor and generator stand-



HAS SOLICITORS FOR WIRING:

—H. F. Hartman, Scranton, Penna., has four solicitors on appliances and two who work in the rural districts lining up prospects for farm lighting circuits. One of his men recently persuaded every farmer on a rural line to apply for electric service, and of course all wiring was done by Hartman.

ards approximately 100 orders for this helpful reference book have been received at the A.E.I. headquarters.

This publication is a compilation of standards prepared with the co-operation of manufacturers of practically all well-known motors and allied equipment, concerning the manufacture, test and performance of alternating and direct current motors and generators and other widely used apparatus. It contains in convenient form definitions, abbreviations, tables of values and ratings, and of especial value to motor and industrial control specialists a set of connection diagrams, representing up-to-date standardized practice in the United States.

The standards are now available to all motor specialists desiring to purchase them and may be secured on order placed with the A.E.I. headquarters office, at \$1.50 per copy.

Address Changes

The following changes of address of A. E. I. chapter officers have been noted since publication of the January issue: A. P. Bagby, president, Jefferson County Chapter, 3115-3rd Ave., S., Birmingham, Ala.; D. B. Clayton, secretary, Jefferson County Chapter, 844 Martin Building, Birmingham, Ala.; Claude Wilson, secretary, Lubbock Chapter, 1301-19th St., Lubbock, Tex.

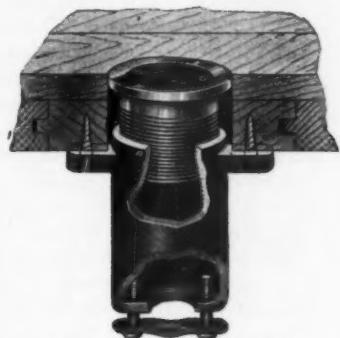
New Members

The following applicants have been accepted into the A. E. I. since the publication of the list in the January issue:

TEXAS

<i>Edinburg:</i>	Star Electric Co.
<i>Fort Worth:</i>	Dickey Electric Co.
	Ewell Electric Co.
	Michael Electric Co.
<i>Mission:</i>	
	McLain's Radio & Electric Shop.
<i>San Angelo:</i>	Bullock-Taylor Electric Co.
	Bunyard Electric Co.
	Braden & Co., Fred H.
	Texas Electric Co.

"LATROBE" PRODUCTS



Sectional View of No. 300 Box illustrating installation in floor.

No. 300 "LATROBE" MIDGET FLOOR RECEPTACLE AND BOX

This is the only Flush Non-Watertight Floor Receptacle and Box on the market approved by the Underwriters Laboratories for installation in wood floors.

Designed to provide an extremely small flush convenience outlet (only 2" diameter) with low installation cost and rugged mechanical construction. Recommended for installation under dining tables, in living rooms, show windows, etc. Ideal for "all electric" A. C. radio sets. Cheaper to install in old houses than baseboard outlets. Every "Red Seal" wiring job and every "Electrical Home" should be well provided with No. 300 Floor Receptacles.

List Price, each.....\$2.00

NOTE—It is no longer permitted to install ordinary wall boxes in wood floors.



Cut-away view of No. 110 Box showing how the tapered unit receptacle fits tapered opening in top of box body.

No. 110 "LATROBE" NON-ADJUSTABLE WATERTIGHT BOX

The No. 110 Box represents the "last word" in unique design, neat appearance, fewest number of parts and least amount of labor to install. The No. 208 Receptacle is designed to eliminate the use of fussy small screws, receptacle straps, filler plates, complicated assembly, etc. The wireman simply attaches the wires to the Receptacle, fastens on the Cover Plate and the Receptacle is ready for use. Saves 15 to 20 minutes installation time on each box, makes a safer job and leaves more wire space inside the box. Cover Plates are 3½" diameter.

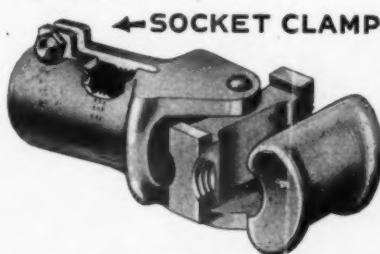
List Price with Receptacle and Bell Nozzle.....\$4.00

No. 208 "T" SLOT RECEPTACLE

This Receptacle fits all "Latrobe" Watertight Boxes and is interchangeable. It is a complete unit and does not have to be taken apart to be wired. Designed to eliminate many of the small fussy parts such as small screws, receptacle straps, filler plates, etc. "Latrobe" Watertight Floor Boxes are the only make on the market that can be equipped with one unit style of receptacle and we unconditionally guarantee No. 208 Receptacles against breakage. Broken Receptacles replaced, no charge.



No. 208 Receptacle with tapered sides to fit tapered tops of all "Latrobe" Watertight boxes.



No. 625 Conduit Bender showing socket clamp.

No. 625 "LATROBE" HAND CONDUIT BENDER

This Bender combines two tools in one. By reversing the movable jaw it can be used for bending either ½" or ¾" conduit. It will not slip or kink the pipe. Deep socket (threaded internally at bottom of socket) for 1" pipe handle, eliminates couplings and insures full strength of handle. The socket clamp is a new feature to insure tight fit on undersize pipe handle and to prevent handle from unscrewing. Made of "Certified" Malleable Iron—guaranteed not to break—and galvanized finish.

List Price, each.....\$3.00

CARRIED IN STOCK BY LEADING JOBBERS

Fullman

Manufacturing Co.

1211 Jefferson St. :: Latrobe, Pa.

Mail this Coupon Today

FULLMAN MANUFACTURING CO., 1211 Jefferson St., Latrobe, Pa.
We are in the market for Floor Boxes. Send us your catalog and a FREE copy of the 1930 Nat'l Elec. Code.

Name.....

Address.....

City..... State.....

Our Jobber is.....

C. A. Luxton, secretary and W. R. Place and Bob Koontz, directors.

Contracting News

Information of Interest to Electrical Contractors consisting of items of news, short articles, practical ideas, etc. Our readers are invited to contribute to this department

Kansas City Chapter Reelects Officers

Harry C. Evans of Evans Electrical Construction Co. was reelected president of the Greater Kansas City Chapter of Electragists, with the following officers also reelected to serve in 1931: W. T. McAuley, vice-president; and J. F. Costelow, secretary. E. H. Clark, W. T. McAuley, H. F. Hewett, R. B. Randall and J. F. Costelow were reelected as board of directors. G. V. Dameron was appointed chairman of the educational committee; R. B. Randall, chairman of the entertainment committee, and E. H. Clark, chairman of the labor board.

The Approval Bureau, which was opened the early part of 1930, is being successfully maintained by the contractors at a cost of approximately \$1000.00 a month. The plan is that any work having plans or specifications must be certified before work is started and approved when finished.

Lehigh Valley Contractors Hold Election

The 1931 officers elected by the Lehigh Valley Electrical Association are Robert Bauchspies, Lehighton, Pa., president; Joseph Hoffman, Allentown, vice-president; A. W. Reinert, Allentown, secretary-treasurer. The Board of Directors are as follows: Edgar M. Brown, Hellertown, Pa.; W. I. Litzenberger, Catawauqua, Pa.; O. J. Jones, Slatington,

Pa.; John Kates, Allentown; Frederick Dorney, Cetronia, Pa.; and Gallas Wukitsch and M. H. Schmoyer, both of Allentown.

Plan New Code for South Bend

Plans for a new electrical Code for South Bend, Ind., are now being worked up by the Association of Electrical Engineers of South Bend. The board of directors actively engaged in this work are Charles Colip, chairman; L. Brehmer, treasurer;

Wisconsin Forms State Association

Electrical contractors representing 20 cities and towns in Wisconsin met at Milwaukee, Wis., on January 23 to organize a state association.

George Andrae of Milwaukee was elected chairman and a temporary board of directors was appointed to draw up a constitution and by-laws. The temporary name chosen was the Wisconsin State Electrical Contractors and Dealers Association.

Considerable discussion was had on the various objects of the association and among the outstanding were a state license law and merchandising policies. Leo Mayer, president of the Association of Electragists, addressed the meeting.

Code Changes to Be Considered

The electrical committee of the National Fire Protection Association will hold its annual meeting at New York City, on February 17, 18 and 19, at which time the reports of the article committees on proposed changes in the National Electrical Code will receive consideration.

A large number of changes are proposed which, if passed, will prob-

(Continued on page 85)



REGULAR ATTENDANCE AT NIAGARA FRONTIER CONTRACTORS' MEETINGS:—Although the Niagara Frontier Electrical Contractors' Association meet twice monthly, there is usually a regular attendance. The picture shown above was taken at one of the meetings: Front row, left to right, are Clarence W. Uschold, president; Otto E. Wangler, vice-president; W. T. Bettendorf, secretary, and Al Wolf, treasurer. Second row, Ernest Kronson; Frank Page; Mason Brown; F. Clifford and William Maderer. Third row, S. Galvin; John Mehs; Fred Lederer; A. Kolb; Charles Cook; Frank Schumm and Peter Quirmbach. Rear row, Cornel Stricker; Albert Fromholz; E. Kerling; Fred Bast; David Serns; E. Freeman and A. Fink.

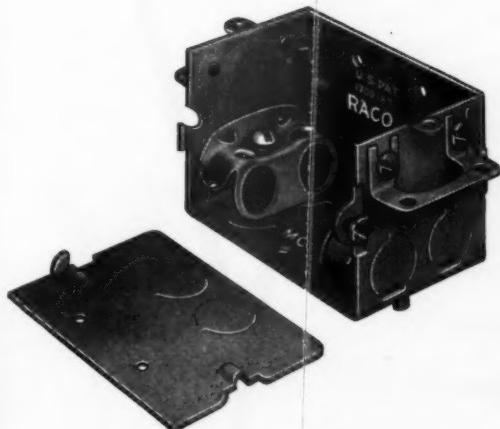


PRI-RACO OUTS

■ Have You Tried Them?

If you haven't tried RACO PRI-OUT BOXES you've been missing some big time and saving benefits. RACO PRI-OUT BOXES mean quicker, easier and better wiring jobs, yet they cost no more than old fashioned boxes.

RACO PRI-OUT BOXES



Constitute the first real improvement ever made in switch boxes.

Consider these 4 outstanding advantages:

NOTICE
"RACO" PRI-OUT Boxes are covered by United States Patents U. S. No. 1709187, Re-issue No. 17765, Canadian No. 289,333 and other patents pending. Owned by the Roach-Appleton Mfg. Co. Look for patent numbers or date which appears on products of licensed manufacturers.

1. Wiremen do not injure fingers with Pri-Out Boxes. Discs do not have to be knocked inwardly and broken off with fingers as in old type boxes.
2. The slot in Pri-Out Boxes permits prying tool to be inserted and the disc pried out.
3. Pri-Outs are set flush with the box permitting $\frac{1}{8}$ " more room on inside of the box for wiring.
4. All these features over our regular old style line of knockout boxes at no additional cost.

One pry with any prying tool flings the disc away from the box, quickly, safely, surely. Its simplicity increases the efficiency of your men by reducing fatigue to a minimum.

PRI-RACO OUTS
TRADE MARK

ROACH-APPLETON MFG. CO.

SOUTH BEND, INDIANA

There is no reason why you should lose a lighting job on price . . . no reason why you should lose out because you can't find exactly the unit your customer wants. Put the Wakefield.

In addition to the regular and popular "Red Spot" hanger lines, Wakefield makes hundreds of lighting specialties and fixtures built to individual specifications . . . for example, fixtures for the U. S. Quartermasters Corps, the Navy and Treasury Departments, the Veterans Bureau. A great hospital job was secured by one of our distributors on a unit specially adapted to the customer's needs . . . a large hotel job came to another of our distributors because we were able to conform to an unusual specification at a very right price and give jig-time delivery.

If you do not find just what you want in our regular data sheets, write us. We may have it or may be able to fabricate it. If price competition has you worried, give us a chance to help you. We may be able to figure a way out . . . Our whole purpose in this advertisement is to assure you that in price or product, you may rely upon Wakefield.

**THE
F. W.
WAKEFIELD
BRASS CO.**
Vermilion, Ohio
U. S. A.



Suggested RESALE PRICES *for* Wiring Supplies

The prices listed on the following pages are merely suggested resale prices for the commonly used standard supplies and equipment employed in electrical construction work. They are based on average current trade costs throughout the country, very largely obtained from jobbers' price sheets, and are also based on average overhead charges.

* * *

Obviously, prices can be suggested only for the widely used products that are nationally distributed, and under no circumstances is this section intended to function as a directory of products or manufacturers.

* * *

The publishers wish to again emphasize that these are merely *suggested* resale prices and while every effort is made to make them universally applicable and accurate we cannot guarantee them or assume any responsibility for errors.

* * *

The prices appearing in this section will be completely revised each month as trade prices may change.

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Electrical Trade Publishing Co.

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Suggested Resale Prices for Wiring Supplies

These are merely suggested resale prices for the commonly used products that appear regularly on jobber price lists. They are figured on generally accepted principles for computing resale prices and should cover average conditions but are not guaranteed. (See note on title page.)

A-SUNDRIES

COUCH Electrical Reset						
Number of Drops	Style D		Style F Flush		Style F Flush	
	Face Type	Wood Face	Wood Face	Wood Face	Metal Face	
4	DA 4	\$21.50	FA 4	\$44.80	FA 4	\$49.80
6	DA 6	36.50	FA 6	49.80	FA 5	55.00
8	DA 8	51.50	FA 8	53.80	FA 8	59.70
10	DA 10	36.50	FA 10	58.25	FA 10	64.70
12	DA 12	43.00	FA 12	64.25	FA 12	71.30
15	DA	.....	FA 15	73.10	FA 15	81.50
16	DA 16	56.50	.....	.....	.....	.....
20	DA 20	69.75	FA 20	88.15	FA 20	98.00

ADAPTORS & REDUCERS For Sockets and Vases						
	Arrow	Benj.	Bryant	G. E.	Hubbl.	Price
Mogul to Medium.....	202	98	421	070	—	\$0.50
Medium to Candelabra.....	302	—	392	3500	—	.25
Candelabra to Miniature.....	301	—	301	—	—	.25
Medium to Intermediate.....	492	—	6961	—	492	.25
Parallel Blades to Medium.....	1006	K.F.	682	5424	—	—
Plug in Pull Socket.....	35024	—	35024	35024	—	1.90
Vase Adapters, Benjamin No. S. 831, 832, 833—Each.....	—	—	—	—	—	2.00

SOCKET EXTENSIONS	\$ 4.40
Benjamin No. 91 Socket Extension—Ea.	\$ 4.40

EXTENSION ARMS FOR PULL SOCKETS

For Brass or Porcelain Sockets with 8"-10"-12" or 14" Reflec.	\$0.55
* * * * * 16"-18" or 20"	.65
ATTACHMENTS FOR PULL SOCKETS	
For 8" to 14" Reflectors No. 5528-5529-5057-5058	\$0.55
* * * * * 5525-5526-5059-5060	.65

5953—5954—5959
ADJUSTERS

ADJUSTERS For Cords		Price
Universal Cord Adjuster	Standard Size No. 1417 3 $\frac{3}{4}$ " Long.	\$ 16
" "	Factory No. 1418 5 $\frac{1}{4}$ " Long.	14
" "	Reinforced No. 1419 5 $\frac{3}{4}$ " Long.	20
Ball Type No. 1403 & 5 for Type C Cord.	16 hole.	16

for Reinforced Cord 36 hole.

ACORNS & TASSELS	
Luminous Acorns and Pendants for Pull Chain.....	\$0.30
Brass Acorns and Tassels for Pull Chain.....	.10
Brass Acorns Adjustable for Lines Cord.....	.10
Insulating Link for Pull Chain.....	.10

BOXES, SWITCH

STANDARD SWITCH BOXES				Price Glad.
	Depth		Black	
For Loom .....	.2, 2½ or 2½"	Without clamps	\$.16	\$.21
" "	2, 2½ " 2½"	With "	.18	.21
For Metallic Cable.....	2, 2½ " 2½"	With "	.16	.21
" "	3"	With "	.32	.36
For Rigid Conduit.....	1½ to 2½"	Without "	.16	.21
" "	3 & 3½"	Without "	.32	.36
Spacers—For Spacers on 1/8" deeper from any of above prices.....			.04	.05

With BRACKETS or EXTENDED EARS or LATH SUPPORTS

	Depth		Price Black Galvd.
For Loom.....	.2 3/4 or 2 1/4"	Without clamps	\$.20 .24
" "	.2 3/4 or 2 1/4"	With "	.22 .26
For Metallic Cable or Loom.....	.2 3/4 or 2 1/4"	With "	.28 .33
" Rigid Conduit.....	.2 to 2 1/4"	Without "	.25 .30

SECTIONAL BOXES

	Boxes	Spacers		
	Black	Galvd.	Black	Galvd.
For Loom or Romex.....	2-1/4 Deep	\$0.20	\$0.22	\$0.04 \$0.05
* Rigid or Flex Conduit.....	2 & 2-1/4 "	.22	.24	.05 .06
* Flex. Met. Conduit Only	2"	.25	.27	.05 .06

SOLID GANG BOXES—GALVANIZED

	Covers Extra							
	2 Gang	3 Gang	4 Gang	5 Gang	6 Gang	7 Gang	8 Gang	
Price of Box . . .	\$.75	\$1.15	\$1.50	\$2.00	\$3.75	\$5.65	\$8.10	
Price of Cover . . .	.38	.55	.75	.95	1.80	3.20	3.55	

TANDEM SWITCH BOXES

Loom, BX or Conduit	Black				Galvanized			
	2 Gang	3 Gang	4 Gang	2 Gang	3 Gang	4 Gang		
Tandem Boxes 1 1/2 & 2" Deep	\$6.68	\$1.10	\$1.63	\$8.81	\$1.25	\$1.90		
" 2 1/2 & 3 1/4 "	.81	1.23	1.90	.95	1.37	2.18		

DOOR SWITCH BOXES

DOOR SWITCH BOXES		Black	Galvd.
For Rigid or Flexible Conduit without Clamps.....		\$.50	\$.55
" " " " with Clamps.....		.55	.65
LAUNDRY BOXES			
Gem-Appleton or Raco, etc., with Single Receptacle.....		Black \$1.10	Galvd. \$1.25
" " " " Duplex		1.25	1.35
For Concrete Boxes See Page PL-5.			
For Solid-Cast Boxes See Page PL-6.			

BOXES & COVERS. OUTLET

CEILING BOXES, ROUND

Universal Nos.	Size and Description	Depth	Knockouts Bottom Side	Price Black Galv'd.
36115	3 $\frac{1}{2}$ " With Lugs.....	2 $\frac{1}{2}$	3- $\frac{1}{2}$ " & 4" Loom	\$0.12 \$0.13
36116	3 $\frac{1}{2}$ " No	2 $\frac{1}{2}$	3- $\frac{1}{2}$ " & 4 "	.10 .12
36125	3 $\frac{1}{2}$ " With	2 $\frac{1}{2}$	3- $\frac{1}{2}$ " & 4 "	.14 .16
36126	3 $\frac{1}{2}$ " No	2 $\frac{1}{2}$	3- $\frac{1}{2}$ " & 4 "	.12 .14
36716	3 $\frac{1}{2}$ " Flat Plate with Clamps.....	2 $\frac{1}{2}$	3- $\frac{1}{2}$ " & 4 "	.09 .11
56111	4" With Ears	3 $\frac{1}{2}$	4" or 4 $\frac{1}{2}$ " K.O.	.10 .12
56112	4" No	3 $\frac{1}{2}$	4" or 4 $\frac{1}{2}$ " K.O.	.09 .11
56115	4" With Ears-Loom & Cond.	3 $\frac{1}{2}$	4" or 6" Loom	.11 .14
56116	4" No	3 $\frac{1}{2}$	4" & 6 "	.00 .11
56121	4" With Ears	3 $\frac{1}{2}$	4" or 4 $\frac{1}{2}$ " K.O.	.14 .16
56122	4" No Ears	3 $\frac{1}{2}$	4" or 4 $\frac{1}{2}$ " K.O.	.10 .12
56125	4" Ears-Loom & Conduit	3 $\frac{1}{2}$	4" & 6" Loom	.16 .19
56126	4" No Ears	3 $\frac{1}{2}$	4" & 6 "	.14 .16
56729	4" Flat Plate	5 $\frac{1}{2}$	4" or 4 $\frac{1}{2}$ " K.O.	.09 .11

OUTLET BOXES, OCTAGON

OUTLET BOXES, OCTAGON				
Universal Nos.	Size and Description	Depth	Knockouts Bottom Side	Price Black Galv'd.
24151 3 ¹ / ₂ " Oct.-Conduit Box ..	1 ¹ / ₂ "	1-1 ¹ / ₂ "	4-1 ¹ / ₂ "	\$0.11 \$0.13
24151 3 ¹ / ₂ " -	1 ¹ / ₂ "	1-1 ¹ / ₂ "	4-1 ¹ / ₂ "	.12 .15
24151 FS 3 ¹ / ₂ " - With Stud ..	1 ¹ / ₂ "	1-1 ¹ / ₂ "	4-1 ¹ / ₂ "	.21 .23
54151 4" Oct.-Conduit Box ..	1 ¹ / ₂ "	4-1 ¹ / ₂ "	4-1 ¹ / ₂ "	.14 .17
54151 4" -	1 ¹ / ₂ "	5-2 ¹ / ₂ "	4-1 ¹ / ₂ "	.16 .19
54151 FS 4" - With Stud..	1 ¹ / ₂ "	5-2 ¹ / ₂ "	4-1 ¹ / ₂ "	.21 .23
54155 4" Cond. & Loom B ..	1 ¹ / ₂ "	9-1 ¹ / ₂ "	12-2 ¹ / ₂ "	.20 .23
54171 4" Conduit Box ..	2 ¹ / ₂ "	3-4-1 ¹ / ₂ "	3-4-1 ¹ / ₂ "	.25 .28

Motor specialists--- pass in review

It's time to pass in review. For the past three months we have been laying our policy before you. Many are the comments and questions we have received in response—praise, doubt, skepticism. > > > Many motor specialists still hesitate to take us seriously; our policy toward them apparently seems to be too good to be true. > > > Others question some of the details of our policy, and for their benefit we herewith pass everything in review. Just read the center part of this advertisement; that's the story, with no "ifs" and "buts" about it. > > > For more details, write any

There are hundreds of thousands of establishments which do not and cannot maintain special electrical departments to specify, buy, install and service electric motors. These are the motor specialist's logical clientele, for Wagner cannot economically and does not desire to contact such a large number of firms. Wagner recognizes the motor specialist's right to sell such establishments without competition from the motor manufacturer. > > >

one of the branch offices listed below—where, incidentally, motor specialist contract blanks await your signature.

Atlanta, Ga.	Houston, Texas	Philadelphia, Pa.
Baltimore, Md.	Indianapolis, Ind.	Pittsburgh, Pa.
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Buffalo, N. Y.	Los Angeles, Calif.	Salt Lake, Utah
Chicago, Ill.	Memphis, Tenn.	San Francisco, Cal.
Cincinnati, Ohio	Milwaukee, Wis.	Seattle, Wash.
Cleveland, Ohio	Minneapolis, Minn.	St. Louis, Mo.
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DOSSERT CONNECTORS

in the

American Museum of Natural History



Installation of Dossert connectors at the American Museum of Natural History.

Fischbach & Moore
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Over 100,000 ft. of 500,000 C. M. cable is being required and Dossert connectors used to join cable ends at junction boxes and to tap off for branch circuits.



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RECEPTACLES
OUTLETS
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Quality in 1931 will be more essential than ever. Your customers, large and small, appreciate the value in a well planned and designed installation.

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Sold Through Good Jobbers Everywhere.

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DIVISION C

Solvay Station

Syracuse, N. Y.

Push Buttons, Etc.

PUSH BUTTONS, TREADS, SPRINGS

STANDARD PUSHES AND TREADS

Description	Ans.	Edw.	Fara.	P&W	Price
Round $1\frac{1}{4}$ " and $1\frac{1}{2}$ " Stamped Brass.....	506	603	SP51	29	\$0.20
Round $2\frac{1}{2}$ " Stamped Brass.....	527	600	SP50	27	.25
Round $2\frac{1}{2}$ " with Card Holder Stamped Brass.....	507	601	SP57	25	.40
Rectangular $4\times 2\frac{1}{2}$ " Stamped Brass.....	604	SP54	55	.40	
Rectangular $3\frac{1}{2}\times 1\frac{1}{4}$ " Stamped Brass.....	605	SP53	50	.40	
Oval $2\frac{1}{2}\times 1\frac{1}{4}$ " Stamped Brass.....	606	SP55	...	.30	
Oval $4\frac{1}{2}\times 2\frac{1}{2}$ " Stamped Brass.....	609	SP56	...	.45	
Pear Push Buttons—Wood or Composition.....	605	67	5-9	3	.60
Pear Push Buttons—Metal, Nickel or Brass.....	68	MPS	...	.85	
Desk Buttons— $\frac{1}{2}$ " Hole—Nickel.....	562	59	7A	4	.75
Desk Buttons— $\frac{1}{2}$ " Hole—Nickel.....	63	63	...	4	.65
Desk Buttons— $\frac{1}{2}$ " Hole—Nickel.....	D33	620	5A	4	.45
High Voltage $\frac{1}{2}$ " Hole—110 Volts.....	85	85	855	2.40	
Table Clamp with Push Button.....	571	206	TCl	...	1.00
Floor Pushes Combination Nickel.....	560	235	CFP2	...	.85
Floor Treads—"Daisy" "Dixie".....	800	290	FT1	...	1.50
Wood Push Buttons.....	...	...	...	...	.20

BAKELITE OR COMPOSITION PUSHES

Round Plain $1\frac{1}{4}$ " Diam.....	\$0.30	Rectangular Plain $1\frac{1}{4}\times 3\frac{1}{4}$ ".....	\$0.40
Octagon Fancy $1\frac{1}{4}\times 1\frac{1}{4}$ " Diam.....	.35	Rectangular Fancy $1\frac{1}{4}\times 3\frac{1}{4}$ ".....	.60
Oct. Card Holder $2\frac{1}{2}\times 2\frac{1}{2}$ " Diam.....	.40	Rec. Double Card Holder.....	.85

DESK PUSHES—COMPOUND
With Buttons

Make and Description	1	2	3	4	5	6
Edw. #140-Bakelite Block.....	\$2.10	\$2.50	\$3.20	\$3.65	\$4.50	\$5.25
Edw. #197 Less Cord Bakelite Bl.....	3.50	4.75	6.00	7.25	8.50	9.75
Edw. #197 with 6' Cord Bakelite Bl.....	4.05	6.10	7.75	9.45	11.15	12.85
Edw. #190 Wood—Less Cord.....	4.00	5.35	6.60	8.10	9.40	10.80
Edw. #190 Wood with Cord.....	4.45	6.65	8.35	10.30	12.05	13.90
Fara. #4C Wood Less Cord.....	2.00	2.30	2.60	3.05	3.50	3.90
Fara. #2A Wood Less Cord.....	4.90	7.00	8.50	10.60	12.40	13.80
Fara. B.D.P. Less Cord.....	3.50	4.75	6.00	7.25	8.50	9.75
Fara. M. D. P. All Metal Less Cord.....	6.00	11.00	16.00	21.00	...	...
P&W #4 Wood Less Cord.....	2.60	2.80	3.50	4.30	4.85	5.60
P&W #5 Wood Angle Less Cord.....	2.60	3.00	3.50	4.30	4.85	5.60
P&W #12 Wood Less Cord.....	3.30	4.25	5.45	...	...	6.00

DOOR AND WINDOW SPRINGS

Door Springs	Window Springs
Open Circuit Door Spring.....	\$0.40
Closed Circuit Door Spring.....	.50
Open Circuit Make and Break.....	.50
Open Circuit Door Trip.....	1.00
Open Circuit Transom.....	1.60

OTHER PUSH BUTTONS

Ansonia

Round Stamped	Price	Round Cast	Price
514 $1\frac{1}{2}$ " Loose Back.....	\$0.30	511 $1\frac{1}{2}$ " Loose Back.....	\$0.90
515 $2\frac{1}{2}$ " Loose Back.....	.40	512 $2\frac{1}{2}$ " Loose Back.....	1.00
579 $1\frac{1}{2}$ " Flush Push.....	1.00	508-10 $2\frac{1}{2}$ " Loose Back.....	1.00
E33 $1\frac{1}{2}$ " Flush Push.....	1.00	540 $2\frac{1}{2}$ " Loose Back.....	.60
		550 $2\frac{1}{2}$ " Loose Back.....	.85
		570 $2\frac{1}{2}$ " Loose Back.....	.75

Other Ansonia Push Buttons, Etc.

F-33	Stamped Flush Push.....	\$0.70	545	Oblong 2 Gang for Cards.....	\$1.85
G-33	Stamped Diamond Push.....	.70	545	Oblong 3 Gang for Cards.....	2.65
521	Stamped Push.....	.75	545	Oblong 4 Gang for Cards.....	3.65
528-534	Stamped Push.....	.95	545	Oblong 1 Gang.....	1.65
536-537	Stamped Push Loose Back.....	1.00	547	Oblong 2 Gang.....	1.50
538	Stamped Oblong Push.....	1.25	548	Oblong 1 Gang.....	1.20
541	Oblong for Card.....	1.65	549	Diamond Push.....	.70
544	Oblong for Card.....	1.20	578	Diamond Push.....	.75
Combination Floor Pushes Complete	573.....	2.50			
700 1 Point Wood Base Switch.....		.45			

Edwards

Round Desk Buttons	Oblong Push Buttons
621 $\frac{1}{2}$ " Hole.....	\$1.40
622 $\frac{1}{2}$ " Hole.....	1.45
625 $\frac{1}{2}$ " Hole.....	.50
1786 $2\frac{1}{2}$ " Watertight.....	3.00
	650—Single Solid Cast Brass.....

Patrick & Wilkins

Round Push Buttons
Stained Wood Push #2.....
Oak Wood Regular #1.....
Oak Open, Closed and Dbl. Cont. #1.....
Oak Triple Contact #1.....
Cast Brass $1\frac{1}{2}$ " Diam. #5.....
Cast Brass $2\frac{1}{2}$ " Diam. #5.....

Oblong Pushes

16 Cast Brass $4\frac{1}{2}\times 1\frac{1}{4}$ " Screw Cap.....	\$1.55
31 Cast Brass $5\frac{1}{2}\times 2\frac{1}{2}$ " Screw Cap.....	2.15
44 Cast Brass $4\frac{1}{2}\times 2$ " Screw Cap.....	1.40
708 Wrought Push and Speak 1 Pce.....	1.00
907 2 Button and Card Holder.....	2.15
908 3 Button and Card Holder.....	2.95
909 4 Button and Card Holder.....	4.55

OTHER PUSH BUTTONS—Continued

Patrick & Wilkins

Desk Push Buttons

Car Push $\frac{1}{2}$ " Hole Black Center.....	\$0.45
Multiple $\frac{1}{2}$ " Hole Black Center.....	1.35
Pony $\frac{3}{4}$ " Hole Black Center.....	1.85

Pear Shape Pushes

Compound Maple 2 Button.....	\$2.00
Compound Maple 3 Button.....	3.00
Wood Rosettes for above.....	.40

MULTIPLE PUSH BUTTONS

Couch "Pushrites"

With Card Holders

Number of Buttons	Plain Base	Weighted Base	Flush Brass Plate Type
4	7900	\$ 3.35	7980
6	740	4.60	789
8	7910	5.80	7990
12	7921	8.30	79010
16	7930	10.80	79020
20	793	13.30	7902

COUCH UNMOUNTED PUSH BUTTONS "WORKRITES"
No. 97 for $\frac{1}{2}$ " Hole.....
Adaptor No. 0684 for same.....

BRACKETS FOR INSULATORS

WOOD BRACKETS

1 $\frac{1}{2}$ " x 2" x 10".....	.07	1 $\frac{1}{2}$ " x 2" x 12".....	.06
1 $\frac{1}{2}$ " x 2" x 12".....	.08	2" x 2 $\frac{1}{2}$ " x 12".....	.10
1 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x 12".....	.09	2" x 2 $\frac{1}{2}$ " x 12".....	.10

PINS

Locust 1 $\frac{1}{2}$ " x 8".....	.06	Locust 1 $\frac{1}{2}$ " x 9".....	.10
Oak 1 $\frac{1}{2}$ " x 8".....	.05	Oak 1 $\frac{1}{2}$ " x 9".....	.08

HOUSE BRACKETS WITHOUT INSULATORS

Peirce

No.	Wires	Points	Heavy Type	Peirce
1607	One	.25	0"	\$.25
190	Two	.55	1/4"	.25
191	Two	.55	1/2"	.30
296	Two	.80	5/8"	.55
299	Two	.80	9"	.55
394	Three	.90	1 1/4"	.80
396	Three	.90	1 1/2"	.85

SECONDARY RACKS WITH INSULATORS

Peirce

No.	Wires	Space	Length	Space	Price
276	2	6"	\$.90	28	8"
376	3	6"	1.30	378	8"
1276	2	6"	.85	1278	2
1376	3	6"	1.30	1374	3"
2768	2	8"	.90	2768	3"
3768	3	8"	1.30	3768	3"

INSULATORS ONLY FOR ABOVE BRACKETS

Peirce

355	Insulator.....	\$.20	1603	Insulator.....	\$.10
356	"	.25	1606	"	.15
465	"	.30			

UNIVERSAL RACK UNITS

Less Insulators

No.	702	Rack Foot with Bolt.....	\$.20
704	4" Extension.....	.25	.25
708	8"	"	.35
712	12"	"	.45

PL-10

Cord & Wire Connectors

Fuses

CORD & WIRE CONNECTORS

SMALL FIXTURE & WIRE CONNECTORS Solderless

Insulated Solderless Wire or Fixture Connectors Similar to "Ideal"
"Marr" "No-Torch" "Simplex" "Wirelets" "Wiremold" "Wirenuts" Etc.—each \$1.10
Non-Insulated Solderless Wire Connectors—2 Screw—All Metal.....10

SET SCREW CONNECTORS

Round Brass

	No.	No.	No.	No.	No.
Divided Wall—2 Screws.....	12-14	10	8	6	4
" " 4 "	\$.06	\$.08	\$.10	\$.14
Hole Thru 2 "11	....	.13	.18
" " 4 "20
Divided Wall—2 Screws.....	No.	No.	No.	No.
" " 4 "	2	1/0	2/0	3/0
Hole Thru 2 "20	\$.26	\$.32	\$.50
" " 4 "20	.24	.30	.45
Divided Wall—2 Screws.....22	.28	.30	.60

SOLDERLESS CONNECTORS

Dessert or Penn-Union

No. Size Cond.	No.	No.	No.	No.	No.	No.
3 to 1 1/0	3 to 0 2/0	3/0 4/0	250,000	300,000	400,000	500,000
2 Way L's.....	\$.75	\$.80	\$ 1.00	\$ 1.20	\$ 1.40	\$ 1.65
Cable Tap.....	1.05	1.20	1.40	1.75	2.10	2.40
3 Ways & Y's.....	1.05	1.20	1.40	1.75	2.10	2.40
Lugs FB Ang.....	.55	.60	.70	.90	1.10	1.40
						2.40

CORD & MOTOR CONNECTORS

Complete Body Only Cap Only

Arrow	No.	Price	Body Only	Cap Only	No.	Price
Midget Comp.	8238	\$.60	.....	.....	.....	.....
Arrotex	8239	.85	.....	.....	.....	.....
Motor Conn.	RP-8221	.60	8221	.55	R.P.	\$.10
" "	RA-8222	.65	8222	.55	RA	.15
" "	RH-8224	1.05	8224	.75	RH	.35
" "	RG-8281	1.05	8281	.75	RG	.35
" "	8334 & 35	1.10	8335	1.10	8334	1.10

Bryant

Motor Midget Conn.	KT-130	.70	130	.65	K.R.	.10
Conn.	KG-103	.75	103	.55	KG	.25

GE	Cord Conn.	1346-1347	.90	1347	.45	1346	.45
" "	.....	.....	.....	1351	.60	2527	.10
" "	2719	1.50	2720	.95	2721	.35	
" "	2715	.65	2716	.55	2717	.10	
" "	.....	.....	1347	.40	1346	.40	

Hubbell

Cord Connector	5894	.80	5574	.55	5896	.25
" "	6116	.70	6118	.55	5904	.15
" "	6179	.75	6630	.55	6631	.20
" "	6180	.65	6630	.55	6181	.10
" "	5518	.80	5574	.55	5420	.25
" "	7083	1.35	7084	.85	7056	.55
" "	7090	1.80	7091	1.10	7092	.75
" "	6408	1.25	6409	.85	6149	.45

Weber

Cord Connector	2274	.60	.74	.45	2200	.20
Wirt

Note: For Attachment Plugs and other caps—See Pages PL-16 & PL-17

E-SUNDRIES

EXTENSION CORDS—MADE UP

With Plug & Socket, but Guards-Lamps & Handles Extra

Length in Feet	Lamp Cord With Key Socket No. 18	With Reinforced Cord and Key Socket No. 18	With Artificial Silk Cord and Key Socket Twisted or Parallel No. 18
4 Foot.....	\$.75	\$.80	\$.85
6 "	.80	.90	.95
8 "	.85	1.00	1.05
10 "	.90	1.10	1.20
12 "	.95	1.20	1.30
14 "	1.00	1.30	1.45
16 "	1.05	1.40	1.55
18 "	1.10	1.50	1.65
20 "	1.15	1.60	1.75
22 "	1.20	1.65	1.85
24 "	1.25	1.75	1.95

Length in Feet
With All Rubber Cord and Weatherproof Socket

Light	No. 18	No. 16	No. 18	No. 16
4 Foot.....	\$ 1.00	\$ 1.10	\$ 1.15	\$ 1.25
" "	1.20	1.30	1.40	1.50
" "	1.35	1.50	1.65	1.75
" "	1.50	1.70	1.90	2.00
" "	1.75	1.90	2.15	2.25
" "	1.90	2.10	2.40	2.50
" "	2.10	2.30	2.65	2.75
" "	2.25	2.50	2.90	3.00
" "	2.40	2.70	3.15	3.25
" "	2.65	2.90	3.40	3.50
24 "	2.80	3.10	3.65	3.75

ELBOWS & BENDS For Rigid Conduit

Size	1/2"	3/4"	1"	1 1/4"	1 1/2"
Black.....	\$.16	\$.21	\$.32	\$.41	\$.54
Galv.....	.19	.24	.37	.46	.62

Size	2"	2 1/2"	3"	3 1/2"	4"
Black.....	\$.88	\$ 1.45	\$ 3.70	\$ 8.10	\$ 9.40
Galv.....	1.00	1.65	4.25	9.30	10.75

EXPANSION SHIELDS & ANCHORS

(Ackerman—Diamond—Dryvin—Johnson—Packtite—Paine—Star or Similar)

Screws Not Included.		Hammer Drive Anchors With Nail	
Expansive Screw Anchors or Caulking Anchors for Machine Screws or Bolts.	Size Screw or Bolt	Price	Size of Shield
6-32 Screw.....	\$.06	1/8 x 1/4"	.....
8-32 "	.07	1/8 x 1/4"	.....
10-24 "	.08	1/8 x 1/4"	.....
12-24 "	.10	1/8 x 1/4"	.....
1-4x20 Bolt	.12	1/8 x 1/4"	.....
5-16x18 "	.15	1/8 x 1/4"	.....
3-8x16 "	.20	1/8 x 1/4"	.....
7-16x14 "	.20	1/8 x 1/4"	.....
1-2x13 "	.20	1/8 x 1/4"	.....
5-8x13 "	.30	1/8 x 1/4"	.....
		1/2 x 3/8"	.....

Multi-Size Screw Anchors

Length of Anchor.....	Screw Size
5 to 10	5/16"
8 to 14	1/4"
16 to 20	1/2"
20 to 26	5/8"

Price Without Screw.....	\$ 0.04	\$ 0.05	\$ 0.06	\$ 0.08
Takes Lag Screw.....	\$.15	\$.15	\$.18	\$.25
Price Without Lag Screw.....	\$.40	\$.60	\$.90	\$ 1.00

LAG SCREW ANCHORS (Diamond or Similar)

Takes Lag Screw.....	1/8"	1/4"	5/16"	3/8"
Price Without Lag Screw.....	\$.15	\$.15	\$.18	\$.25
Price Without Lag Screw.....	\$.40	\$.60	\$.90	\$ 1.00

FUSES

PLUG FUSES

Standard Plug Fuses—Any Make—\$.07 each or 5 for \$.35
(Some Manufacturers put these fuses up 4 in a box, in which case they should be retailed at 4 for \$.25.)

ENCLOSED FUSES, NON-RENEWABLE

Amps.	Non-Indicating		Indicating	
	Price Each	Price Each	Price Each	Price Each
1 to 30	\$.10	\$.30	\$.20	\$.40
35 to 60	.20	.40	.35	.65
70 to 100	.50	1.10	.95	1.75
110 to 200	1.20	1.85	1.85	2.90
225 to 400	2.15	4.10	3.35	6.35
450 to 600	4.10	6.00	6.35	9.25
650 to 800	8.95	11.00	13.85	17.35

RENEWABLE FUSES

Fuses Links

Amps.	250 Volts	600 Volts	250 Volts	600 Volts
1 to 30	\$.50	\$ 1.10	\$.08	\$.08
35 to 60	1.00	2.25	.05	.06
65 to 100	2.00	3.00	.10	.10
110 to 200	4.00	5.00	.15	.15
225 to 400	7.50	11.00	.30	.30
450 to 600	11.00	16.00	.60	.60

FUSE WIRE

Size in Amps.	1/16"	1/4"	1"	3/8"

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THREADED CONDUIT FITTINGS

STANDARD TYPES, COVERS EXTRA

"Condulets" "Taplets" "Unilets" "Electrolets" "V. V."
"Adaptilets" Etc.

	Form 7	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$	$1\frac{3}{4}''$
A	Form 7	\$.33	\$.44	\$.60	\$.97	\$ 1.12
B		.40	.50	.70	1.23	2.10
C		.50	.67	.83	1.29	2.11
CO-COV		.70	.91	1.05	1.75	2.25
E		.40	.50	.70	1.12	1.46
F	Form 7	.70	1.12	1.75	3.08	4.46
LB-LF-LL-LR-LBB		.66	.63	.91	1.47	1.96
LFB-LLB-LRB		.66	.63	.91	1.47	1.96
LBL-LBR		.91	1.12	1.33	1.75	2.80
P-PA		1.95	2.20	2.40	...	...
PC-PL		2.10	2.30	2.50	...	...
PT		2.40	2.65	2.95	...	...
PX		2.50	2.80	3.10	...	...
T All One Size		.67	.80	1.12	1.71	2.37
TA All One Size		.98	1.05	1.40	2.18	3.22
TB-TL-TR		.68	.81	1.12	1.71	2.38
U-U		.68	.75	1.10	1.76	2.35
X All One Size		.84	1.09	1.47	1.96	2.50
Gaskets		.14	.14	.21	.28	.28
Reducers		.21	.21	.28	.42	.56
Connectors CCT		.40	.42	.49	1.54	1.96
Unions U. N. Y.		.65	.75	1.10	1.75	2.65
Form 7		$\frac{3}{8}''$	$2\frac{1}{4}''$	$3''$	$3\frac{1}{4}''$	$4''$
A	Form 7	\$ 2.32	\$ 4.56	\$ 6.50	\$ 10.80	\$ 11.70
B		3.65	5.46	7.30	9.10	16.65
C		3.40	6.24	8.10	11.70	14.30
CO-COV		4.45	6.75	10.27	16.38	17.95
E		3.00	5.46	6.50	10.80	11.70
F	Form 7	7.00	10.66	13.26	23.58	32.50
LB-LF-LL-LR-LBB		5.50	6.50	8.45	13.50	15.60
LFB-LLB-LRB		5.50	6.50	8.45	13.65	15.60
LBL-LBR-LW		5.72	8.32	...	...	...
T All One Size		5.58	6.50	9.75	14.30	16.90
TA All One Size		5.58	6.50	9.75	14.30	16.90
TB-TL-TR		5.58	6.50	9.75	14.30	16.90
U-U		4.20	7.80	10.15	16.38	18.75
X All One Size		4.90	7.80	13.00	16.90	20.80
Gaskets		.35	.52	.52	.65	.65
Reducers		.70	1.30	1.76	2.60	3.58
Connectors CCT		3.01	6.65	11.15	...	...
Unions U. N. Y.		4.10	6.65	11.15	...	...
For Form 6 LB Fittings See PL-13						

COVERS
For Above

		$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$
Porcelain Covers with Holes		\$.14	\$.21	\$.35	\$.51
Composition		.25	.42	.70	1.40
" " Blank		.42	.66	.84	1.54
Porcelain	" For Drop Cord	.49	.66	...	...
" " Weatherproof		22	.35	...	...
Metal Cover	Blank Sheet Steel	.12	.16	.33	.45
" " Cast Iron		.21	.31	.49	.70
" " with $\frac{1}{4}$ Nipple		.28	.35	.59	...
" " " $\frac{1}{4}$ "		.33	.40	.54	...
" " " $\frac{1}{2}$ "		.35	.42	.56	...
Porcelain Covers with Holes		\$.67	\$.84	\$ 1.12	\$ 2.16
Composition	" " Blank	1.55	1.68	...	...
Porcelain	" For Drop Cord	1.68	1.96	4.46	6.30
" " Weatherproof		...	...	...	...
Metal Covers	Blank Sheet Steel	.63	.79	1.05	1.12
" " Cast Iron		.98	1.26	1.81	1.75
" " with $\frac{1}{4}$ Nipple		...	...	...	...
" " " $\frac{1}{2}$ "		...	...	...	...

RECEPTACLES & ROSETTES
For Above

		$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$
Plug Receptacles 10 Amp. 2 Pole 250 Watt		\$.50	\$.63	\$.70
" " 15 "	2 "	125 "	...	.63
" " 20 "	2 "	250 "	.77	.84
" " 10 "	3 "	250 "	.84	...
" " 15 "	3 "	125 "	.91	...
" " 20 "	3 "	250 "	1.10	1.20
Lamp Receptacle 600 Watt with Shade Holder		.42	.49	.56
Cord Rosette	" "	...	.42	.49
				.56

FS SERIES FOR FLUSH DEVICES

Shallow Type Without Covers, Any Make

No. Gangs	No. Pipe Outlets	Series	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$
Single Gang	One	FS-FSA	\$.91	\$ 1.05	\$ 1.19
"	Two	FSC-FSL-FSR	...	...	...
"	Three	FSCA-FSSC-FSAA	1.05	1.26	1.54
"	Four	FSX-FSC	1.40	1.75	2.03
Two Gang	One	FS-FSA	1.68	1.82	1.96
"	Two	FSC-FSS	1.82	1.96	2.17
"	Three	FSD	2.08	2.17	2.31
2 Gang Tandem	One	FS	2.31	2.45	2.59
"	Two	FSC	2.45	2.59	2.73
Three Gang	One	FS-FSA	...	2.52	2.73
"	Two	FSC	...	2.66	2.87
"	Four	FSD	2.73	3.01	3.32
Four Gang	One	FS-FSA	...	3.08	3.36
"	Two	FSC-FSS	...	3.29	3.50
"	Five	FSD	3.44	4.00	4.34

COVERS FOR FS FITTINGS

Description	Single Gang	2 Gang	3 Gang	4 Gang
Metal Cover for Flush or Surface Push Button Tumbler Switches	\$.21	\$.42	\$.63	\$.84
Metal Cast Covers Guarded for Switches	.50	.91	1.40	1.96
" Covers for Single Flush Receptacles	.35	.70	...	...
" " Duplex	.42	.84	...	...
" " with $\frac{1}{4}$ Brass Nipple	.56	...	...	...
" " For Pilot Lamp Rec. with Jewel	.63	...	...	...
" Iron Vaporproof with Operating Mechanism	2.45	4.20	...	...
" Brass	3.50	8.05	...	...
" Blank Cover Sheet Steel	.14	.28	.56	.84
" " Cast	.35	.70	1.05	1.40
Porcelain Cover with Holes	28	...	...	...

COMBINATION COVERS FOR FS SERIES

2 Gang for One Switch and one Sgle. or Duplex Receptacle	\$.70
2 " " " Bull's Eye with Jewel	1.75
2 " " " One lift cover Receptacle	1.05

RECEPTACLES & PLUGS

Type	3 Pole	250 Volt D. C.—600 Volt A. C. Style 1	15 Amp.	30 Amp.	60 Amp.
Crouse-Hinds or Similar	15 Amp.	30 Amp.	60 Amp.	...	...
QEE Receptacle	\$ 10.20	\$ 10.35	\$ 10.45	...	...
AJA	10.10	10.20	10.35	...	...
AJB	...	...	...	19.95	20.10
CP Watertight Plugs	9.70	9.70	9.70	15.45	17.60

G & H WITHOUT ADJUSTABLE BAR

Type	Crouse Hinds or Similar	5 Amp.	10 Amp.	20 Amp.
G.	...	\$.56	\$.70	\$ 1.05
GL.63	.77	.98
GA-GLA-GT.84	.98	1.19
GTA-GX-GXA	1.05	1.19	1.68	1.82
H.42	.56	.77
HA.49	.63	.84
HH.56	.70	.91
HHC.84	.98	1.19
HLA.63	.77	.98

G & H WITH ADJUSTABLE BAR

Type	Crouse Hinds or Similar	5 Amp.	10 Amp.	20 Amp.
G.	...	\$.77	\$.91	\$ 1.26
GL.	...	.84	.98	1.33
GA-GLA-GT.	1.05	1.19	1.54	1.82
GTA-GX.	1.26	1.40	1.89	2.03
GXA.	1.50	1.71	2.17	2.51
H.	...	.63	.77	.98
HA.	...	.70	.84	1.19
HH.	...	.77	.91	1.26
HHC.	1.05	1.19	1.54	1.80
HLA.	...	.84	.98	1.33

COVERS FOR G & H SERIES

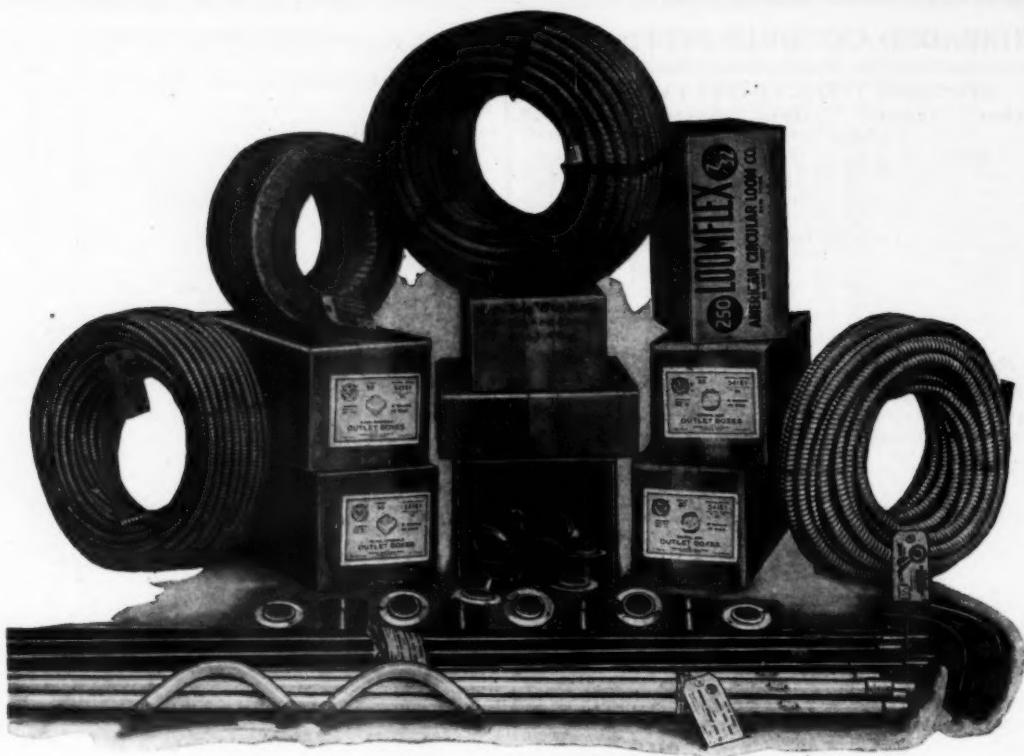
Description	For G & H Fittings Without	For G & H Fittings With Adjustable Bar
Porcelain Cover with Wire Holes	\$.28	\$.35
Blank Sheet Steel Cover	.21	.28
" Cast	.35	.42
Sheet Steel with $\frac{1}{4}$ Brass Nipple	.35	.42
" " " " " without	.42	.49
Cord Rosette Porcelain	.50	.56
" Composition	.56	.63
Receptacle Cover No Shadeholder	.70	...
" With	1.12	...

DEVICES FOR G & H SERIES

Lamp Receptacles one piece with or without Shadeholder Groove	\$.35
" " " " " without	.70
Cord Rosette Porcelain	.56

J & K SERIES WEATHERPROOF

	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$
J-A-JB-JU	...	\$.84	\$ 1.05
IL95	1.19
IT	...	1.19	1.33
IX	...	1.33	1.50
K	...	1.50	1.61
KA-KB-KC-KD70	.91
		.84	1.05



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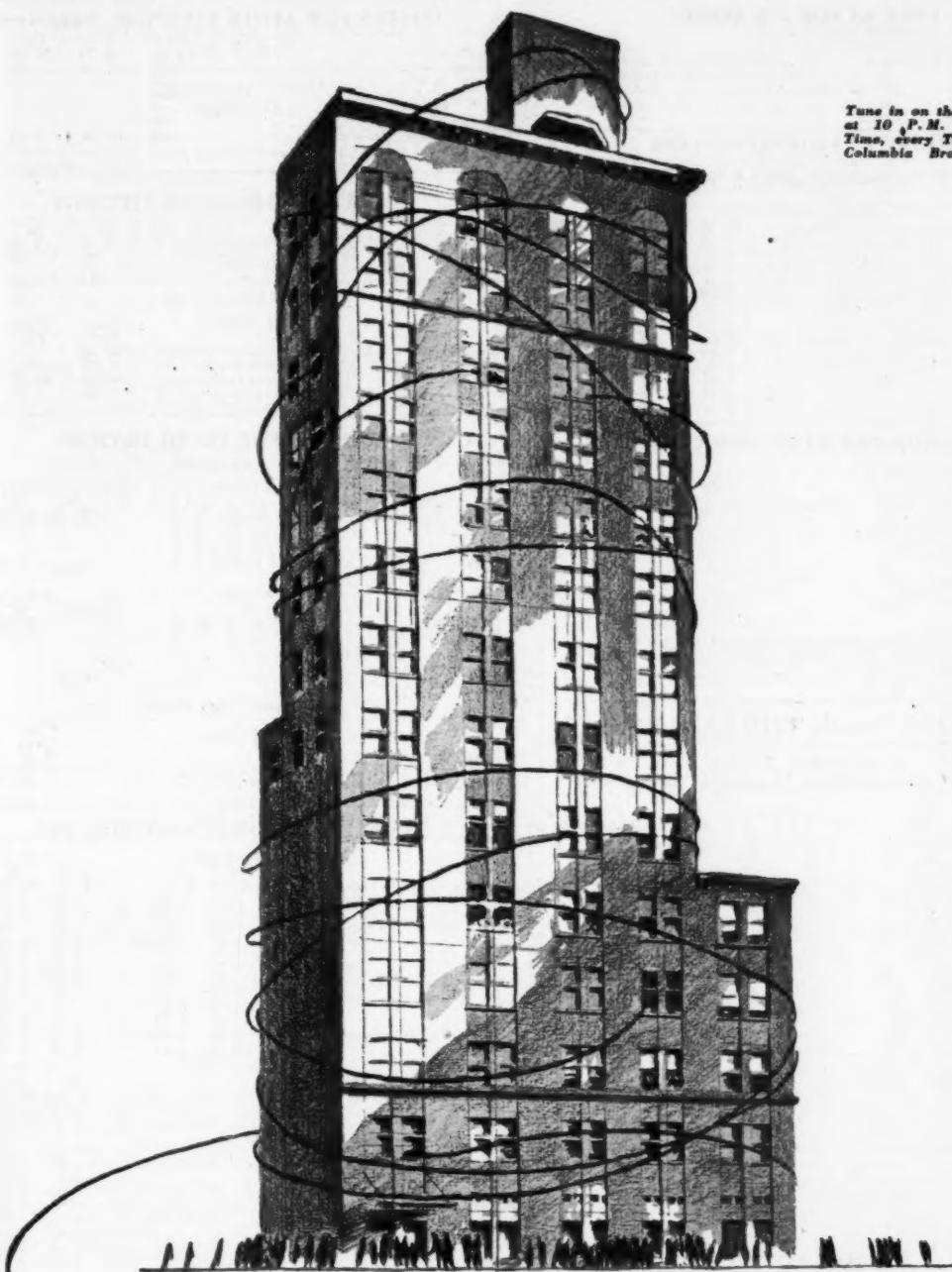
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at 10 P.M. Eastern Standard
Time, every Tuesday
Columbia Broadcasting System.

how a little wire can tie up a lot

(...and why it shouldn't)... It doesn't take much defective wire to tie up the biggest building—as every contractor knows. And tie-ups can be mighty expensive!... Careful contractors best serve their clients by installing only quality materials... The electrical contractor knows that it is sometimes difficult to identify quality—when good, bad, and indifferent supplies look so much alike?... But he knows, too, that one sure guide is the reputation and experience of the supplier... Graybar's record as supplier is the history of quality electrical construction in America from the beginning.

OFFICES IN 76 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BLDG., NEW YORK, N. Y.

GraybaR

Fittings, Threadless

FITTINGS, SPRAGULETS, WIRELETS
OR T & BBRANCH TYPE
Series 48

Description	G.E. Steel City or T & B Numbers	Price Each
Branch Body Rectangular for $\frac{3}{4}$ " & $\frac{3}{4}$ " Conduit.	SP-48241	\$.25
Cover Metal Flat Closed.	SP-48C1	.10
" " " with $\frac{1}{2}$ " Knockout.	SP-48C6	.10
" " " Pendant Type with $\frac{1}{2}$ " Bushing.	SP-48C8	.12
" " " with $\frac{1}{2}$ " Male or Female Nipple.	SP-48C11	.15
" " " with $\frac{1}{2}$ " Male or Female Nipple.	SP-48C22 & 23	.30
Cover Porcelain with one or two wire Holes.	SP-48C24 & 25	.40
" " " three or four wire Holes.	SP-48C75 & 76	.14
	SP-48C77 & 78	.15

SHALLOW TYPE
Series 14

Description	G.E. Steel City or T & B Numbers	Price Each
Body Octagonal Shape for $\frac{3}{4}$ " or $\frac{3}{4}$ " Conduit.	SP-14241	\$.35
Cover Metal Flat Closed.	SP-14C1	.10
" " " Raised with $\frac{1}{2}$ " Knockout.	SP-14C7	.10
Cover Metal Flat Pendant with $\frac{1}{2}$ " Bushing.	SP-14C8	.12
" " " with $\frac{1}{2}$ " Male Nip.	SP-14C11	.16
" " " with $\frac{1}{2}$ " Male Nip.	SP-14C22-24	.30
" " " For all Surface Mounted Devices	SP-14C28	.15
" " " Raised for Sign Receptacles.	SP-14C31-34-35-36	.12
" " " Flat for all Fluted Devices.	SP-14C39	.35
Porcelain with one or two holes.	SP-14C75 & 76	.15
" " " Three or Four holes.	SP-14C77 & 78	.15

DEEP TYPE
Series 34

Description	G.E. Steel City or T & B Numbers	Price Each
Body Deep Octagonal Shape $\frac{3}{4}$ " & $\frac{3}{4}$ ".	SP-34461	\$.45
Cover Metal Blank Flat.	SP-34R1	.14
Cover Metal For Push Button Switch.	SP-34R2 & 3	.14
" " " Single Receptacle.	SP-34R5	.14
" " " Standard Duplex Receptacle.	SP-34R7	.14
" " " For GE 30 Amp. Polarized Plug Recp.	SP-34R13	.16
" " " GE Tumbler Switches.	SP-34R14	.14
" " " Hubbell and H&H Tumbler Switches.	SP-34R15	.18

COUPLINGS

SP-1410 Complete Coupling for $\frac{3}{4}$ " Conduit.	Price
SP-1420 " " $\frac{3}{4}$ "	.25

FITTINGS, ENTRANCE OR SERVICE

"ADAPTI"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$
Ent. Ells with Cov. Ser. 1100.	\$.45	\$.50	\$.60	\$ 1.05
" " Fitt. with Cov. Ser. 2700.	.45	.55	.65	1.10
Angle Ent. Fitt. with Cover Ser. 2700.	.50	.55	.65	1.20
Signal Ent. Caps No. 2810-2811.	.75	.80		
	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
Ent. Ells with Cov. Ser. 1100.	\$ 1.55	\$ 3.00	\$ 6.25	\$ 7.65
" " Fitt. with Cov. Ser. 2700.	1.85	3.00	6.25	7.25
Angle Ent. Fitt. with Cov. Ser. 2700.	1.85	3.00	6.30	7.25
Signal Ent. Caps No. 2810-2811.				

"APPLETON"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$
FEB Elbow with Cov. 1700 & 1900.	\$.50	\$.60	\$ 7.00	\$ 1.70
FB Elbow with Cov. 1713 to 16.	.35	.50	.60	
FC End Fitt. with Cov. 1723-33-43.	.20	.25	.30	
AY Angle Fitt. 1950 to 54.	.50	.55	.70	1.85
LAY End Fitt. with Cov. 1700 to 94.	.45	.50	.60	1.10
MF Reversible Fitt. 3200-3230.	.45	.55	.75	1.30
	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
FEB Elbow with Cov. 1700 & 1900.	\$ 1.90	\$ 3.25	\$ 7.50	\$ 9.00
FB Elbow with Cov. 1713 to 16.				
FC End Fitt. with Cov. 1723-33-43.				
AY Angle Fitt. 1950 to 54.	2.25			
LAY End Fitt. with Cov. 1700 to 94.	1.75			

"BEND HICKS"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$
Bend Hicks Galvanized.	\$.50	\$.60	\$.65	\$ 1.75
	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
Bend Hicks Galvanized.	\$ 1.15	\$ 4.10	\$ 6.00	\$ 8.25

"CAP-SWIVEL-LET"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$	$1\frac{1}{4}"$	$2"$
"A" Inside Work #1010 to 1064.	\$ 20	\$ 25	\$ 30	\$ 55	\$ 85	\$ 1.30
"BW" Threadless Fitt. 4112-4134.	.45	.50	.75			
"FW" Outside Work 1412-1464.	.40	.50	.65	1.05	1.80	3.00
"LB" Service Entrance 3110-3130.	.50	.65	.65			
Type "AM" for Nipple $\frac{3}{4}"$ Long.	\$ 20	For Nipple $1\frac{1}{4}"$ Long.		\$ 25		
Type "BXA" from 1600 to 1613.		From 1614-1624.				
From 1632-1634.	.35					

"CONDULETS" - Form 6

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$
F Type Ent. Fitt. with Pore. Cov.	\$.40	\$.45	\$.60	\$.95
LB Type Ent. Fitt. with Metal Cov.	.45	.50	.60	1.15

F Type Ent. Fitt. with Pore. Cov. \$ 1.00 \$ 2.85

LB Type Ent. Fitt. with Metal Cov. 1.40 2.45

"ELECTROLETS"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
FB Angle Fitt. with Cov. 713-53.	\$.45	\$.55	\$.70	\$ 1.10			
KA End Fitt. with Cov. 1013 to 43.	.20	.20	.25	.35			
SLB Elbow Fitt. with Cov. 1 to 4.	.50	.55	.60	1.00			
Y Capped Elbow Y1 to S.	.50	.55	.65	1.75			

"GENERAL ELECTRIC"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
With Covers							
Ent. Caps Series	1525 to 1534	\$.45	\$.55	\$.70	\$ 1.00	\$ 1.25	\$ 1.95
Capped Elbow Series	1470 to 1472						
Capped Elbow Series	1480 to 1484	2.25					
Insulets Series	1610 to 1612						
Insulets Angle Series	1640 to 1642	.30	.40	.50			
Entrance Ells	1490 to 1495	.40	.45	.55			

GEE-VEE

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
F Service Cap Series	6000.						
B "	16000.						
F Pipe "	1000-1310.						
B "	2000 & 2100.						
FB Universal	3000.	1.00	1.25	1.65	2.75		
Weathercap	40122.	.30	.30				
Service Elbow	19000.						
Endo with Male Thread Series 70000.		.25	.35				
Endo for Armored Cable 31143.							
Endo for Armored Cable							
Series 30000. Nos. 14 and 12 wire. \$ 1.15: No. 10 wire. \$ 2.20: No. 8 wire. \$ 4.45							
SEG Service Elbow Series. 400- $\frac{3}{4}$ - $\frac{3}{4}$ - $\frac{3}{4}$ - $\frac{3}{4}$, \$ 1.15; 1 $\frac{1}{4}$ -1 $\frac{1}{4}$ -1 $\frac{1}{4}$ -1 $\frac{1}{4}$, \$ 1.75							
E Service Cap Series 6000.	\$ 1.00	\$ 1.35	\$ 1.60	\$ 1.90	\$ 2.25	\$ 2.50	\$ 3.00
B Pipe	" " " 16000.	1.00	1.35	1.60	1.90	2.25	2.65
B Pipe	" " " 2000 & 2100.	1.05	1.25	1.75	2.00	2.45	2.85
FB Universal	3000.	3.75	5.40	9.50	12.70		
Weathercap	40122.	2.75	3.60				
Service Elbow	19000.	2.75	3.60				
Endo Terminal	90000.	1.40	2.40	4.35	7.40		

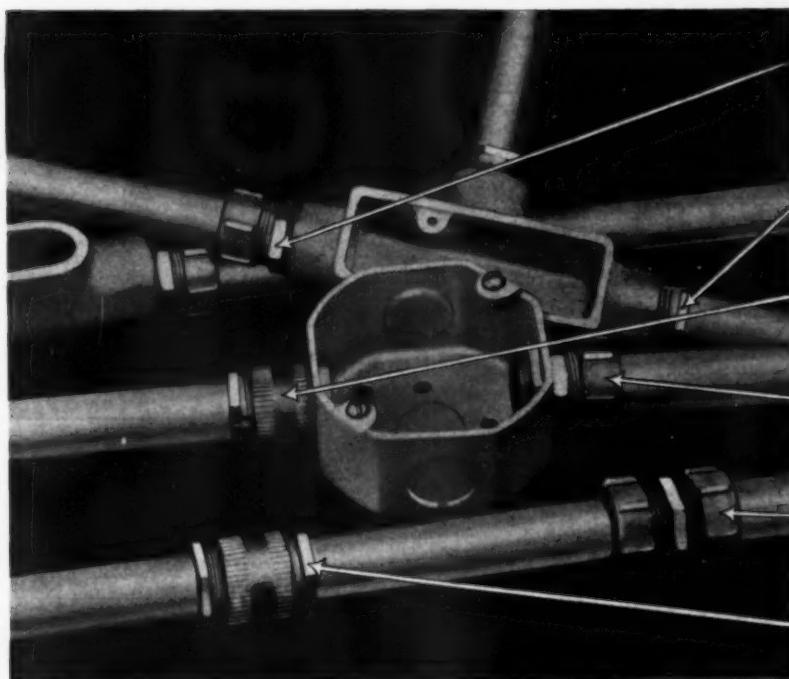
"T & B"

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$
Ent. Cap 1525-32 with Cover.	\$.40	\$.50	\$.65	\$ 1.00
Capped Elbow 1470-84 with Cover.	.50	.60	.70	1.95
Insulets 1610-11-12 with Cover.	.15	.20	.25	
Angle Insulets 1640-1-2 with Cover.	.30	.45	.60	
Cable Insulets 2000 with Cover.	.15			

"V. V."

	$\frac{3}{4}"$	$\frac{3}{4}"$	$1"$	$1\frac{1}{4}"$	$2"$	$2\frac{1}{4}"$	$3"$
Type 2 Term. Fitt. with Cov.	\$ 4.60	\$ 6.81	\$ 6.81	\$ 6.81	\$ 6.81	\$ 6.81	\$ 6.81
Type 6 Term. Fitt. with Bush.	.40	.55	.70	.90	1.30	1.70	2.30
Type 9 Term. Fitt. with Cov.	.70	1.05	1.40	2.80	4.20	7.00	12.65
Push Pore. Cover.	.40	.45	.60	.95	1.60	2.75	6.95
FAB with Pore. Cover.	.40	.45	.65	.85	1.15	2.35	3.80
FC Pipe End Pore. Cover.	.15	.20	.25				
FL with Cast Cover.	.40	.55	.85	1.15	1.35	2.45	
Y Bend Hic.	.50	.60	.85	1.75	2.15	4.10	

FITTINGS, "ADAPTI"



Vaporproof connector for joining STEELTUBES to standard threaded fittings.

Standard adapter for joining STEELTUBES to Standard threaded fitting.

Standard connector for joining STEELTUBES to knock-outs in boxes and panels.

Vaporproof connector for joining STEELTUBES to knock-outs in boxes and panels.

Vaporproof coupling for connecting lengths of STEELTUBES.

Standard coupling for connecting lengths of STEELTUBES.

Takes All Fittings No Threads to Cut . . .

STEELTUBES (E.M.T.)* gives you a choice of two types of fittings . . . standard and vapor-proof. Both are shown in the illustration above.

This thin-wall conduit assures you of a workmanlike job . . . the kind that will help you get new wiring contracts. It bends easily . . . cuts easily . . . is easy to fish wire through . . . and there's no threading.

Electrical Division
STEEL AND TUBES, INC.
Cleveland, Ohio
(A Unit of Republic Steel Corp.)

C *STEELTUBES Electrical Metallic Tubing is threadless, strong, light and easy to handle. Costs less to buy. Saves time and money on the job. *H*

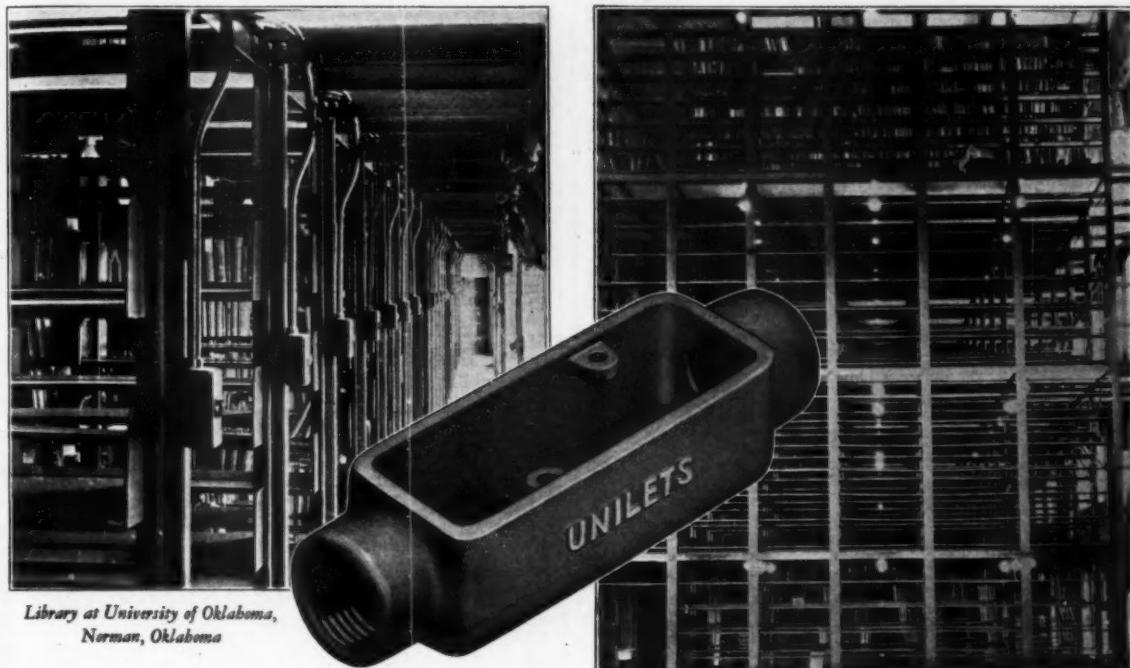
Steeltubes



STEELTUBES [E.M.T.]* has the same inside diameter as heavy conduit. Made in three sizes ($\frac{1}{2}$ ", $\frac{3}{4}$ " and 1") with diameter and wall thickness shown above. One coupling furnished with each ten-foot length.

STEELTUBES carries the Underwriters' Label, and is approved and listed as Standard by the Associated Factory Mutual.

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PROPER lighting and proper fittings are essential in a modern library. An interesting installation of Appleton Unilets is illustrated above in the Library of the University of Oklahoma.

Malleable iron gives Appleton Unilets

greater strength and yet they are lighter in weight. There is maximum wiring space and the cadmium finish resists rust and corrosion.

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OVALDUCT

3 Wire Per Foot \$ 1.17

OVALDUCT FITTINGS

No.	Description	Price Each
24-CQ	Extension box cover for 4" outlet boxes.	\$.45
401	Box Connector with 3/4" Bondnut.	.25
2133	Squeeze Type Coupling 1 1/4" long.	.15
2134	90 Degree Internal Elbow.	.35
"135	45 " Flat.	.26
2136	One piece 90 degree elbow.	.50
2156	90 " Box Connector.	.30
2159	Wire Toggle Fastener.	.03
2161	Strap Fastener.	.02
2181	Connector Ovalduct to Oval Knockout.	.10
2602	Outlet Box 4 x 3/4".	.20
2603	Extension Ring for Boxes.	.20
2605	Outlet Box 4 x 3/4" with Fixture Stud.	.28
2602	" 3 1/4 x 3/4".	.20
2865	" 3 1/4 x 3/4" with Fixture Stud.	.26
4170-S1	Sectional Switch Box 4 x 1 1/2 x 1.	.35
4172-S1	Spacer for above box.	.30

MOLDING, WIREMOLD

MOLDING

No. 500 2-Wire,	price per ft.	..... \$ .10
" 700 4-Wire,	" "	..... .12
" 1000 Master Size,	" "	..... .23

FITTINGS FOR No. 500

2 Wire

Number	Description	Price	Number	Description	Price
502	Bushing.	\$.04	5730	6 1/2" Fixture Box.	\$.95
504	Supporting Strap.	.04	5730A	6 1/2" Extension.	.95
506	Connecting Cover.	.04	5744	Single Gang Box.	.85
511-12	45 & 90 Deg. Elbows.	.22	5744-2	2 Gang.	1.20
515	Tee Plain.	.36	5745	Combination.	.70
516	Cross Plain.	.38	5747	Single Shallow Box.	.75
517	Internal Elbow.	.24	5747-2	2 Gang.	1.05
518	External.	.22	5747-3	3 Gang.	1.15
519	Corner Box.	.38	5748	Single Surface.	1.15
521	1 Piece Rosette.	.36	5748-2	2 Gang.	1.15
523	14" Fixture Rosette.	.75	5748-3	3 Gang.	1.20
524	3/4" Rec.	.70	5748S	Shallow Rec.	.65
525	Receptacle Base.	.80	5749	Switch & Recep.	1.00
526	Keyless Receptacle.	.05	5750	Push Switch Box.	1.05
527	Attachment Plug.	1.00	5751	Single Adp. Plate.	.70
532-23	2 1/2 x 3" Outlet Box.	.45	5752	2 Gang.	1.25
588	Operwork Coupling.	.36	5753	3 Gang.	1.30
590	Moulding Connector.	.08	5780	Blank Extension Box.	.95

FITTINGS FOR No. 700

4 Wire

5701	Coupling.	\$.04	5702	Bushing.	.04	5703	Clip.	.06	704	1 & 2 Hole Strap.	.06	706	Connection Cover.	.04	5707	Multiple Strap.	.10	5708	Fixture Hook.	.22	5709	Ground Clamp.	.12	5711-12	Elbows 45 & 90 Deg.	.22	5715	Tee.	.36	5717	Internal Elbow.	.25	5717A	Elbow Pull Box.	.50	5718	External Elbow.	.22	5719	Corner Box.	.45	5720	Narrow Fitting.	.55	5720A	Show Case Outlet.	.45	5721	1 Piece Rosette.	.45	5724	Comb.	.70	5725	Receptacle Base.	.50	5726	Keyless Receptacle.	.95	5727	Plug Receptacle.	1.00	5728	Utility Box.	.40	5729	Cond. Type.	.40	5730	Contact Block.	.26	5731	Blank Cover.	.15	5732-3	2 1/2 x 3" Outlet Box.	.45	5734	Closed Extension.	.65	5735	Distribution Box.	.75	5736	Distribution Box.	.75	5737	Blank Cover.	.16	5738	4 1/2" Extension Box.	.65	5738D	4 1/2" Fixture Box.	.65	5738E	Stamped Hook Conn. 1.50	.65	5780	Canopy.	.65	5781	Coupling.	.001	5782	Bushing.	.002	5783	Clip.	.003	5784	One Hole Strap.	.008	5785	Hanger Assembly.	.90	5786	Hanger Clamp.	.18	5787	Ground.	.20	5788	Adj. Elbow.	.40	5789	Internal Elbow.	.40	5790	External Elbow.	.40	5791	Adj. Elbow.	.40	5792	Distribution Box.	.10	5793	6 1/2" Fixture.	.90	5794	Switch & Recep.	.90	5795	Utility Box.	.70	5796	Distribution Box.	.90	5797	6 1/2" Pipe Coupling.	1.00	5798	Switch & Recep. Box.	1.00	5799	Angle.	1.40	5800	Blank or Outlet Box.	.50	5801	Distribution Box.	.70	5802	6 1/2" Pipe Coupling.	.90	5803	Adj. Offset Conn.	.40	5804	Openwork Connector.	.45																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
5701	1/2" Box.	1.00	5702	1/2" Box.	.90	5703	1/2" Box.	.80	5704	1/2" Box.	.70	5705	1/2" Box.	.60	5706	1/2" Box.	.50	5707	1/2" Box.	.40	5708	1/2" Box.	.30	5709	1/2" Box.	.20	5710	1/2" Box.	.10	5711	1/2" Box.	.05	5712	1/2" Box.	.05	5713	1/2" Box.	.05	5714	1/2" Box.	.05	5715	1/2" Box.	.05	5716	1/2" Box.	.05	5717	1/2" Box.	.05	5718	1/2" Box.	.05	5719	1/2" Box.	.05	5720	1/2" Box.	.05	5721	1/2" Box.	.05	5722	1/2" Box.	.05	5723	1/2" Box.	.05	5724	1/2" Box.	.05	5725	1/2" Box.	.05	5726	1/2" Box.	.05	5727	1/2" Box.	.05	5728	1/2" Box.	.05	5729	1/2" Box.	.05	5730	1/2" Box.	.05	5731	1/2" Box.	.05	5732	1/2" Box.	.05	5733	1/2" Box.	.05	5734	1/2" Box.	.05	5735	1/2" Box.	.05	5736	1/2" Box.	.05	5737	1/2" Box.	.05	5738	1/2" Box.	.05	5739	1/2" Box.	.05	5740	1/2" Box.	.05	5741	1/2" Box.	.05	5742	1/2" Box.	.05	5743	1/2" Box.	.05	5744	1/2" Box.	.05	5745	1/2" Box.	.05	5746	1/2" Box.	.05	5747	1/2" Box.	.05	5748	1/2" Box.	.05	5749	1/2" Box.	.05	5750	1/2" Box.	.05	5751	1/2" Box.	.05	5752	1/2" Box.	.05	5753	1/2" Box.	.05	5754	1/2" Box.	.05	5755	1/2" Box.	.05	5756	1/2" Box.	.05	5757	1/2" Box.	.05	5758	1/2" Box.	.05	5759	1/2" Box.	.05	5760	1/2" Box.	.05	5761	1/2" Box.	.05	5762	1/2" Box.	.05	5763	1/2" Box.	.05	5764	1/2" Box.	.05	5765	1/2" Box.	.05	5766	1/2" Box.	.05	5767	1/2" Box.	.05	5768	1/2" Box.	.05	5769	1/2" Box.	.05	5770	1/2" Box.	.05	5771	1/2" Box.	.05	5772	1/2" Box.	.05	5773	1/2" Box.	.05	5774	1/2" Box.	.05	5775	1/2" Box.	.05	5776	1/2" Box.	.05	5777	1/2" Box.	.05	5778	1/2" Box.	.05	5779	1/2" Box.	.05	5780	1/2" Box.	.05	5781	1/2" Box.	.05	5782	1/2" Box.	.05	5783	1/2" Box.	.05	5784	1/2" Box.	.05	5785	1/2" Box.	.05	5786	1/2" Box.	.05	5787	1/2" Box.	.05	5788	1/2" Box.	.05	5789	1/2" Box.	.05	5790	1/2" Box.	.05	5791	1/2" Box.	.05	5792	1/2" Box.	.05	5793	1/2" Box.	.05	5794	1/2" Box.	.05	5795	1/2" Box.	.05	5796	1/2" Box.	.05	5797	1/2" Box.	.05	5798	1/2" Box.	.05	5799	1/2" Box.	.05	5800	1/2" Box.	.05	5801	1/2" Box.	.05	5802	1/2" Box.	.05	5803	1/2" Box.	.05	5804	1/2" Box.	.05	5805	1/2" Box.	.05	5806	1/2" Box.	.05	5807	1/2" Box.	.05	5808	1/2" Box.	.05	5809	1/2" Box.	.05	5810	1/2" Box.	.05	5811	1/2" Box.	.05	5812	1/2" Box.	.05	5813	1/2" Box.	.05	5814	1/2" Box.	.05	5815	1/2" Box.	.05	5816	1/2" Box.	.05	5817	1/2" Box.	.05	5818	1/2" Box.	.05	5819	1/2" Box.	.05	5820	1/2" Box.	.05	5821	1/2" Box.	.05	5822	1/2" Box.	.05	5823	1/2" Box.	.05	5824	1/2" Box.	.05	5825	1/2" Box.	.05	5826	1/2" Box.	.05	5827	1/2" Box.	.05	5828	1/2" Box.	.05	5829	1/2" Box.	.05	5830	1/2" Box.	.05	5831	1/2" Box.	.05	5832	1/2" Box.	.05	5833	1/2" Box.	.05	5834	1/2" Box.	.05	5835	1/2" Box.	.05	5836	1/2" Box.	.05	5837	1/2" Box.	.05	5838	1/2" Box.	.05	5839	1/2" Box.	.05	5840	1/2" Box.	.05	5841	1/2" Box.	.05	5842	1/2" Box.	.05	5843	1/2" Box.	.05	5844	1/2" Box.	.05	5845	1/2" Box.	.05	5846	1/2" Box.	.05	5847	1/2" Box.	.05	5848	1/2" Box.	.05	5849	1/2" Box.	.05	5850	1/2" Box.	.05	5851	1/2" Box.	.05	5852	1/2" Box.	.05	5853	1/2" Box.	.05	5854	1/2" Box.	.05	5855	1/2" Box.	.05	5856	1/2" Box.	.05	5857	1/2" Box.	.05	5858	1/2" Box.	.05	5859	1/2" Box.	.05	5860	1/2" Box.	.05	5861	1/2" Box.	.05	5862	1/2" Box.	.05	5863	1/2" Box.	.05	5864	1/2" Box.	.05	5865	1/2" Box.	.05	5866	1/2" Box.	.05	5867	1/2" Box.	.05	5868	1/2" Box.	.05	5869	1/2" Box.	.05	5870	1/2" Box.	.05	5871	1/2" Box.	.05	5872	1/2" Box.	.05	5873	1/2" Box.	.05	5874	1/2" Box.	.05	5875	1/2" Box.	.05	5876	1/2" Box.	.05	5877	1/2" Box.	.05	5878	1/2" Box.	.05	5879	1/2" Box.	.05	5880	1/2" Box.	.05	5881	1/2" Box.	.05	5882	1/2" Box.	.05	5883	1/2" Box.	.05	5884	1/2" Box.	.05	5885	1/2" Box.	.05	5886	1/2" Box.	.05	5887	1/2" Box.	.05	5888	1/2" Box.	.05	5889	1/2" Box.	.05	5890	1/2" Box.	.05	5891	1/2" Box.	.05	5892	1/2" Box.	.05	5893	1/2" Box.	.05	5894	1/2" Box.	.05	5895	1/2" Box.	.05	5896	1/2" Box.	.05	5897	1/2" Box.	.05	5898	1/2" Box.	.05	5899	1/2" Box.	.05	5900	1/2" Box.	.05	5901	1/2" Box.	.05	5902	1/2" Box.	.05	5903	1/2" Box.	.05	5904	1/2" Box.	.05	5905	1/2" Box.	.05	5906	1/2" Box.	.05	5907	1/2" Box.	.05	5908	1/2" Box.	.05	5909	1/2" Box.	.05	5910	1/2" Box.	.05	5911	1/2" Box.	.05	5912	1/2" Box.	.05	5913	1/2" Box.	.05	5914	1/2" Box.	.05	5915	1/2" Box.	.05	5916	1/2" Box.	.05	5917	1/2" Box.	.05	5918	1/2" Box.	.05	5919	1/2" Box.	.05	

Plugs, Appliance

PLUGS, APPLIANCE, Continued

Beaver	F-31	Standard Heater Plug—Single Sided Cont.	\$0.15
"Gripall" & "Suitzall"	F-32	Heater Plug Double Sided Contacts	.20
	F-33	Armored Casing (F-32 Type Armored)	.25
	F-34	Medium Heater Plug—Bakelite	.25
	F-36	Small Heater Plug—Black	.20
	G-2	"Gripall" Heater Switch Plug Adj. Cont.	.80
	G-21	"Gripall" Heater Switch Plug Nickle Alloy	.90
	G-22	Competitive Push Button Type	.45
Bryant	668	Universal Appliance Plug with Switch	.85
	699	Switchless	.50
	752	Appliance Plug with Indicating Switch	.60
	2966	Small Switchless Plug	.45
Cutler-Hammer	7051	Appliance Plug with Switch	.60
G. E.	2602	Armored Heater Plug No Switch	.25
	2633	Large Heater Plug	.20
	2642	Switch * with *	.45
	2699	Small * with *	.25
	2826	"Handy Pull" Heater Plug	.35
Hemco	H250	Switchless Appliance Plug Bakelite	.50
	H260	Switch	.75
Hotpoint	CD6P1	Iron Plug No Switch	.45
	CD69P1	* with * Armored	.60
	CD79P1	* with *	1.00
Kool-Pull (Noark)	8037	Appliance Plug—No Switch	.75
	8039	* with *	1.00
Propp	5	One 4-All Appliance Plug—No Switch	.30
	52	Iron Plug with Switch	.50
	55	Standard Iron Plug—No Switch	.20
	56	Armored	.30
Reynolite	500	Heater Plug	.40
	510	Switch Heater Plug	.75
Rodale	P-21	Heater Plug No Switch Cold Molded	.15
	P-29	* with * Armored	.20
	450	F small Heater Plug—No Switch	.45
	610	Bakelite * with *	.20
	615	* with * Armored Heater Plug—No Switch	.30
	850	Iron Plug with Switch	.45
	800	* with * Armored	.65
Simplex	890	Armored Plug—No Switch	.75
	990	Deluxe Chromplate Plug	1.00
Sunbeam	A-85	Heater Plug	1.50
Torrid	B-070	Automatic Heat Control Plug	1.00
	B-080	* Safety *	1.00
Waage	3 & 4	Heat Plug Only	.50
Westinghouse	209423	Appliance Plug—No Switch	.75
	373656	* With	1.00

PANEL BOARDS OR FUSE CABINETS

FRANK ADAM

		4	6	8	12
All 30 Amp.—S. P.—NEC Fuses	Branch	Branch	Branch	Branch	Branch
"FBX" Safety Type Fuse Boxes	\$3.80	\$5.60			
"NR" Main Cable Lug Only			\$8.90	\$11.90	
NR3G Main Cable Lug Only		11.15	13.40	15.60	
				16.50	19.80

All for Plug Fuses	BENJAMIN-STARRETT	4	6	8	10	12
Cat.	No. Type and Description	Circ.	Circ.	Circ.	Circ.	Circ.
66104-12 NP	—One Fuse 3 Wire Serv.	\$5.20	\$7.40	\$8.90	\$10.40	\$11.90
66204-12 P	—Two Fuse 2 and 3 Wire Serv.	7.50	11.15	13.35	15.60	18.60
66304-12 NEP	—One Fuse with Switch Pl.	7.10	10.30	12.80	16.50	19.15
66404-12 EP	—Two Fuse with Switch Pl.	10.30	15.25	19.15	21.80	25.15

BULLDOG FUSENTERS

No.	Description	2	4	6	8	10	12
CBS	Surface Black Finish with shield	Circ.	Circ.	Circ.	Circ.	Circ.	
BOS	Black Finish without Shield	\$1.80	\$2.30	\$3.90	\$7.00	\$9.75	\$10.30
BF	Flush Luminized Finish	1.65	2.15				
BBF	Black Finish	2.50	3.70	5.35	8.75	10.30	11.75
BSF	Lum. Finish with Toggle Switches	2.00	2.75	4.70			
BSSF	Lum. Finsh with one 30 A. Saftofuse	6.60	9.90	13.20	15.70	19.80	
BSSF	Lum. Finish with one 60 A. Saftofuse	20.50	22.00	31.75	33.35	35.00	
BKF	Lum. Finish with Pull Box	21.50	22.30	32.25	33.75	35.40	
		6.60	9.90	14.85	17.35	19.80	

All-Stee-Equip. Co., FUSE CABES

Style & No.	Description	2	4	6	8	12
C-702-4-6	Surface Small Type	\$1.80	\$2.55	\$3.95		
C-902-4-6	Flush Small Type	2.10	2.80	4.85		
D-3004 to 3074	Surface Type Single Fuse	3.20	5.10	\$7.50	\$10.10	
D-3034 to 3094	Flush Type	3.75	5.60	9.00	12.10	
D-4002 to 4012	Surface Type Double Fuse	3.20	5.10	10.10	23.00	36.00
D-4022 to 4032	Flush Type Double Fuse	3.75	9.00	12.10	27.00	45.00
DS-3304 to 4304	Flush or Surface-Sgl.	6.90	9.25	13.80	21.00	
DS-3502 to 4502	Flush or Surface-Double	6.90	9.25	21.00	34.50	70.00

KILLARK

	2	4	6	8	10	12
Standard Flush Type Panels	Circ.	Circ.	Circ.	Circ.	Circ.	

Circuits	2 Cir.	4 Cir.	6 Cir.		
Black Finish Series 4355 H1 to 6.....	\$1.90	\$2.60	\$4.65		
Aluminum Finish Series 4355 H1 to 6.....	2.40	3.45	5.35		
Circuits	8 Cir.	10 Cir.	12 Cir.		
Black Finish Series 4355 H1 to 6.....	\$8.20	\$9.95	\$10.20		
Aluminum Finish Series 4355 H1 to 6.....	8.65	10.95	11.65		

CUTLER-HAMMER—Fuse Panels—Flush Mounting

G. E. or TRUMBULL—Residence Panel Boards

Surface or Flush Mounting Ciret.	4	6	8	10	12
Single No. 3104 to 3212	Ciret.	Ciret.	Ciret.	Ciret.	Ciret.
Flush Mtg. or Fusing	2906 to 2912				
Surface Mtg.		\$2.80	\$4.55	\$9.65	\$11.25
Double No. 3404 to 3412					
Flush Mtg. or Fusing	2704 to 2712				
Surface Mtg.		9.10	12.40	18.15	23.10
					26.40

"KILLARK" Fuse Cabinets

Standard Flush Type Panels	2	4	6	8	10	12
Series KRP-2 to 12 Inclusive.....	\$2.00	\$2.90	\$4.75	\$6.50	\$8.50	\$10.75

SQUARE D—Fuse Cabinets

Series 37000 to 39000	2	4	6	8	10	12
Flush Series 37000 Black	\$1.85	\$2.50	\$4.50	\$7.90	\$9.50	\$11.15
" 37000 Aluminum	2.35	3.35	5.10	8.30	10.00	11.15
Surface Series 39000 Black	1.85	2.50	4.60	7.90	9.50	11.15

NOTE: 2 & 4 Circuit Flush Type arranged for mounting direct to front side of studding with channels for lathe ends, each..... \$0.30

Combination Fuse Cabinets

60 Amp. Fuse Break and 30 Amp. Circuits	2	4	6	8	10	12
Only Circuits						
Flush Mounting Aluminum	\$7.45	\$12.40	\$14.00	\$14.85	\$23.00	
Surface Black	6.45	10.75	11.55	12.40	20.65	

WADSWORTH Fuse Cabinets & Panelboards

All Dead Front Single Fusing	2	4	6	8	10	12
Circ.	Circ.	Circ.	Circ.	Circ.	Circ.	Circ.
\$2.30	\$3.00	\$4.85	\$7.75	\$7.55	\$11.55	
Flush Mtg Hanger Support	2.85	3.80	6.10	7.55	10.20	12.00
Flush Type for Tgle Sw.	6.85	11.10	13.75	16.40	19.85	

Surface Mtg. Enc. Panel Boards

16 Circ.	20 Circ.	24 Circ.
\$22.00	\$25.35	\$32.00
24.75	28.00	34.65

WESTINGHOUSE Junior Residence Type

2	3	4	6	8	10	12
Junior Residence Panels	Circ.	Circ.	Circ.	Circ.	Circ.	Circ.
No. K-64012-21 & 64052-61	\$2.50	\$2.70	\$3.75	\$5.35	\$8.75	\$10.30
Junior Building Panels for Toggle Switches	No. K-64034-42 & 64074-81	.....	.....	6.60	9.90	13.20
					15.70	19.80

P-SUNDRIES

RUNNING THREAD, PIPE

Price per Foot.	3/4" & 1/4"	5/8"	3/4"	5/8"	3/4"	5/8"
	\$2.25	\$3.30	\$4.45	\$5.55		

SOLDERING PASTE

(Also on Page PL-27.)

Make	2 Oz. Cans	2 Oz. Tubes	4 Oz. Cans	Half Pound	One Pound
Allen	\$2.25	\$4.40	\$5.50	\$7.70	\$1.25
Burley	2.20		.30	.40	.65
Crescent	.25		.40	.65	1.00
G. E.	.25			.90	1.50
Highland	.40			.90	1.65
Nokoro	.25			.90	1.50
Star	.25		.40	.65	1.00

PAINT & VARNISH, INSULATING

Make	Per Pint	Per Quart	Per Gallon	Per Half Gallon
Armalac Insulating Compound	\$0.50	\$0.75	\$1.25	\$2.50
Eja Varnish No. 25	.40			

Switches, Pull Cord**HEAVY DUTY PULL CORD SWITCHES, METAL COVER
With 8 Feet Heavy Cord**

S. P. with Small Porc. Slotted or Solid B.	\$1.65
D. P. with Small Porc. Slotted or Solid B.	1.90
3 & 4 Point with Small Porc. Slotted or Solid B.	1.90
These switches can be furnished with side or bottom open, at same price.	

TYPE "O" PULL SWITCHES**For Ceiling Fixtures or Ceiling Fans**

Single or Double Pole—3 & 4 Point Electrolite & Motor Control—Similar to Bryant #2473 to 2480 with ½ Caps, cord & Ball Fach.	\$2.25
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CANOPY SWITCHES

Rotary Canopy Switches any style any make (except below).....	.30
Tumbler Canopy Switches similar to G. E. 2381.....	.55
Full Type P & S—3316 or 17—Arrow 340—Bryant 666.....	1.00

LEVOLIER PULL SWITCHES

McGill Co.	Price
Tw-Lite Canopy or Fixture Switch #50-51-52.....	\$1.00
Link Switch #50.....	1.00
Conduit Box & Fixture Switch #61-62 & 63.....	1.00
Switch Hickey 64 & 64 A for above.....	.15

PENDANT SWITCHES**With Brass Pendant Cap**

Brass Shell Pend. Cap	Side Button.....	\$.60
	Bottom .....	.85
Type "O"	.....	2.00
All Porcelain	Side .....	.60
(10 Amps)	.....	.85
Pendant Switch & Current Tap. Comp.	.....	1.00

FEED THROUGH SWITCHES

Nickelized Feed Thru Switch.....	\$.50
Composition Feed Thru Switch. Flat Back.....	.50
Composition Feed Thru Switch. Egg Shape.....	.50
Composition Feed Thru Switch. Pony.....	.45

DOOR SWITCHES

Open Circuit—No Box.....	\$3.50
Closed.....	3.50
Iron Box for Door Switch.....	.60

DOOR SWITCHES & OPENERS**Edwards—commonly used types**

Door Opener Mortise Type \$ 2.75	#152 Rim Type Flush.....	\$ 6.00
31	#152 for Surface Conduit.....	25.25
48A	.....	5.75
50A	.....	7.00
51A	.....	1.30
52	Mortise.....	10.50
239—Latch for #52	.....	3.50

Patrick & Wilkins commonly used types

Mortise Type.....	\$2.75
Rim Type.....	\$4.25

SWITCHES, KNIFE, ENTRANCE & PANEL**ENTRANCE & PANEL SWITCHES
30 Amp. 125 Volts, Plug Fused**

Description	Location of Fuses	Price
Double Pole, Rev. Blades.....	Top	\$.75
" Large Size.....	Bottom	.75
Triple.....	Top	1.25
Double Pole Single Branch.....	Top	1.25
" Large Type.....	Bottom	1.25
Double Pole—Double Branch Vert. Mains.....	Top	2.85
Double Pole—Double Branch Vert. Mains.....	Horiz.	2.85
Trip. to D. P. Double Branch Vert. Mains.....	Horiz.	3.05
Double Pole—Double Branch Vert. Mains.....	Mains	3.05

BABY KNIFE SWITCHES**Any Make**

Any Make	Porcelain Base	Slate Base	
	125 Volt	250 Volts	
Single Pole Single Throw.....	15 Amp.	30 Amp.	15 Amp. 30 Amp.
Double "	.50	.60	.60
Double "	.85	1.00	.....
Double "	.60	.70	.70
Double "	1.00	1.30	1.40

TYPE "C" OPEN KNIFE SWITCHES**Slate Base Front Connected**

Front Connected	Slate Base	Not Fusible	Fusible	
		2	3	4
		Pole	Pole	Pole
Sgl. Throw 30 A. 250 V. Only...	\$1.15	\$1.65	\$2.25	
" 30 A.	1.75	2.65	3.50	\$1.75
" 60 A.	2.00	3.00	4.05	2.95
" 100 A.	4.10	6.20	8.25	6.00
" 200 A.	7.45	11.15	14.85	11.15
Dbl. Throw 30 A. 250 V. Only...	1.90	2.95	4.20	.....
" 250 & 500 V. AC	2.80	4.40	6.35	5.80
" 60 A.	3.30	5.10	7.25	5.60
" 100 A.	7.40	11.40	16.15	12.20
" 200 A.	12.85	19.15	25.60	21.45

Front Connected	Slate Base	Not Fusible	Fusible	
		2	3	4
		Pole	Pole	Pole
Sgl. Throw 30 A. 250 V. Only...	\$1.15	\$1.65	\$2.25	
" 30 A.	1.75	2.65	3.50	\$2.65
" 60 A.	2.00	3.00	4.05	3.95
" 100 A.	4.10	6.20	8.25	6.00
" 200 A.	7.45	11.15	14.85	11.15
Dbl. Throw 30 A. 250 V. Only...	1.90	2.95	4.20	.....
" 250 & 500 V. AC	2.80	4.40	6.35	5.80
" 60 A.	3.30	5.10	7.25	5.60
" 100 A.	7.40	11.40	16.15	12.20
" 200 A.	12.85	19.15	25.60	21.45

SWITCHES, REMOTE CONTROL**TYPE "F"—"DIAMOND H"**

Amps	Single Pole	Double Pole	Three Pole	Four Pole
30	716	\$ 30.00	730	\$ 36.00
60	717	43.00	740	48.00
75	718	55.00	750	60.00
100	719	88.00	760	93.60
150	723	100.00	770	108.00
200	724	112.00	780	122.40

SWITCHES, RESIDENCE, METER SERVICE, INDUSTRIAL, ETC.**SQUARE D**

For Cadmium Plated or Galvanized Switches Add 40%

SMALL SERVICE ENTRANCE SWITCHES**30 Amp. "Square D" Switches Residence Type**

Numbers	Volts	For Plug Fuse	Description	2 Pole	3 Pole
07211-97311	125	For	Solid Neut.	\$1.65	\$2.50
99211-99311	125	*	Neut. Fused	1.65	3.00
78211-78311	125	*	Meter Test	2.55	4.10
1211	125	Enc.	Porc. Entr. Switch	1.80	...
97251-97351	250	Encl.	Solid Neut.	1.65	3.20
99251-99351	250	*	Fused Neut.	2.50	4.35

METER SERVICE SWITCHES**"Square D" Accessible Main Fuses Without End Walls**

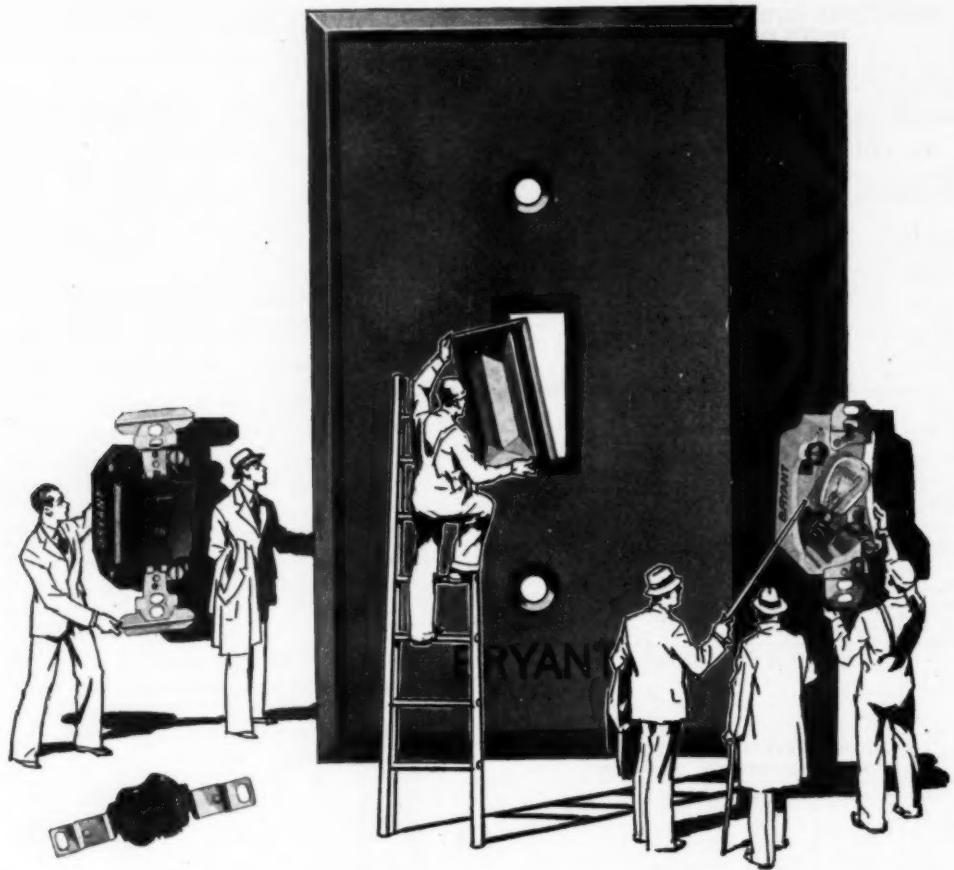
Amps. Poles	Fused	Neutral	Number	Meter Test Type	Non-Meter Test Type
30 2	2 Plug	Fused	30211	\$ 4.00	10211 \$ 3.65
30 2	1 *	Solid	30231	3.50	10231 3.30
30 3	2 *	*	30331	4.50	10331 4.00
30 3	2 *	Unfused	30381	5.20	10381 5.20
30 2	2 Enc.	Fused	30251	4.80	10251 4.60
30 2	2 Enc.	Solid	30261	4.80	10261 4.60
30 3	2 *	Unfused	30362	21.65	10362 20.55
60 2	2 *	Fused	30252	15.10	10252 14.20
60 2	1 *	Solid	30272	14.20	10272 13.30
60 3	2 *	Unfused	30362	16.00	10362 15.05
100 2	2 *	Fused	30253	23.85	10253 23.00
100 2	1 *	Solid	30273	23.85	10273 22.10
100 3	2 *	Unfused	30383	30.90	10383 29.35
100 3	2 *	Solid	30373	25.60	10373 24.85

METER SERVICE SWITCHES**"Square D" Main Fuses Sealed Without End Walls**

Fused Plug Receptacle	5021-30	125	2.20
Cartridge	5001-30	250	5.65
Cabinet Porcelain Fuse Block	1021-30	125	1.25

UNIVERSAL METER SERVICE SWITCHES**"Square D" Meter Service Types**

Single Type	Ganging Type
No. 32211 or 33211 \$ 3.70	All 30 Amp. 125 Volt
No. 32311.....	No. 12211-13211 \$ 4.15
No. 32411.....	Single Phase & DC
No. 34311.....	No. 12311..... 4.45
No. 34411.....	without end walls
No. 34511.....	No. 14311..... 5.65



A Line of Devices for *Tumbler* Switch Plates That is COMPLETE!

TUMBLER Switches are now used almost exclusively in building construction. Bryant has developed, in addition to a complete line of Tumbler Switches, a number of other devices for use with Tumbler Switch Plates. You will need some of them on every job . . . all of them on some jobs. Familiarize yourself with these devices, as follows:

No. 756 Bakelite Blank Insert
No. 2829 Telephone Cord Outlet
No. 2830 Radio Jack Receptacle

No. 746 Pilot Lamp Jewel
No. 427 Pilot Lamp Receptacle
* No. 770 Convenience Outlet

For complete listings, see Bryant Catalog No. 30, Pages 62, 68, 69, 79, 80, 82, 83, 84 and 90.

*No. 770 is approved for use with Composition Plates only.

E-231



B R Y A N T

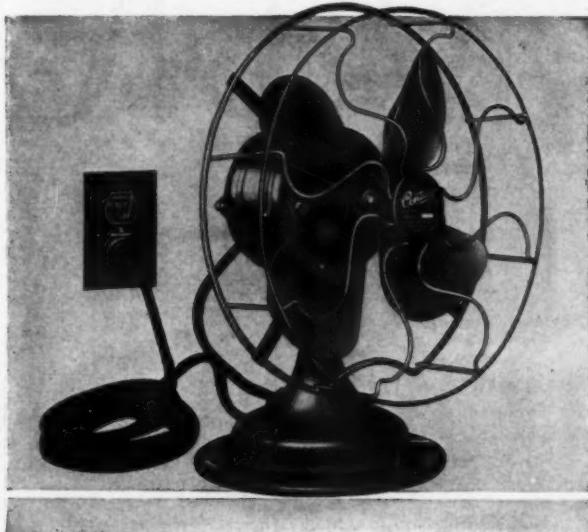
SUPERIOR WIRING DEVICES

Manufactured by
THE BRYANT ELECTRIC COMPANY, BRIDGEPORT, CONN.

MANUFACTURERS OF "SUPERIOR WIRING DEVICES" SINCE 1888-MANUFACTURERS OF HEMCO PRODUCTS

BOSTON • CHICAGO • NEW YORK • PHILADELPHIA • SAN FRANCISCO
50 High Street 844 West Adams Street 60 East 42nd Street 1333 Chestnut Street 149 New Montgomery Street

THEY KEEP A-RUNNING



Century 8-inch A.C. 1-speed Stationary Fan

8-IN. STATIONARY FAN

Alternating Current

ADDED TO THE LINE

The addition of this 8-inch Stationary 1-speed Alternating Current Century Fan enlarges the profit possibilities of the Century Fan line . . . Everything necessary to the correct movement of air is included in the design of this 8-inch fan. It is built throughout with rigid adherence to Century standards and is equipped with the Century Wool Yarn System of Lubrication, which assures at least one season's operation without re-oiling . . . Finished in lustrous black.

Century Fans Build Business

CENTURY ELECTRIC COMPANY

1806 PINE STREET • • • ST. LOUIS, MO.

40 U. S. and Canadian Fan Stock Points and More Than 50 Outside Thereof

SINGLE PHASE,
THREE PHASE,
AND DIRECT
CURRENT MOTORS

MOTOR GENERA-
TOR SETS, ROTARY
CONVERTORS, FANS
AND VENTILATORS

Century
FANS

FOR MORE THAN 27 YEARS AT ST. LOUIS

H & H RADIO OUTLET

No. 2145

NEW HOOK-UP FOR RADIO INSTALLATIONS
—modern, unique in idea. Aerial, Ground and Power connections from a ONE-Gang Outlet. Fits all standard-depth wall boxes; takes standard Bakelite Duplex Receptacle Plates. All Bakelite, face, body and back.

Aerial, ground and power connections are plainly marked on Receptacle. To further insure correct connections, the aerial and ground plug has blades set at angle which prevents insertion in the power slots of Receptacle. In use it is positively fool-proof.

Standard plug cap furnished on radio fits the power slots only—and functions there. Firm, positive contacts replace the loose fit of ordinary radio-plug connections. Both the Aerial-Ground and Power Outlets have Finding Grooves for the plug prongs. A divider plate keeps Aerial-Ground and Power circuits separated in wall box. This arrangement meets the requirements of the National Electric Code.



with Plug
Complete
No. 2145

Aerial-Ground-Power from a 1-Gang Outlet

The new Radio Outlet serves equally well for old buildings or new work. As easily installed as any Convenience Outlet; gets rid of objectionable surface wires. Taking a standard wall box and standard plate, this Radio Outlet becomes a part of the newer-standard wiring job, matching the other wiring devices and completing the scheme of modern electrical convenience. Moisture-proof, safe, serviceable, highly workmanlike. Underwriters Laboratories Approved, of course. With Plaster Ears, standard. . . .

HART & HEGEMAN DIVISION
THE ARROW-HART & HEGEMAN ELECTRIC CO.
HARTFORD, CONN. MAKERS OF ELECTRIC SWITCHES SINCE 1890



Speed in a Safety Switch? Of course, for the quicker the blades break the circuit, the less arc. » » SQUARE D Industrial Safety Switches break the circuit at an approximate speed of a mile a minute. Result—a really quick break, arcing reduced to a minimum and longer contact life. » » SQUARE D Switches rated above 250 Volts are equipped with SQUARE D Arc-Suppressors which cause rupturing of the current in 1/100 of a second, even at 50 percent overload at low power factor. (250-Volt Switches may be so equipped for heavy duty, if required.) » » Other SQUARE D features are individual base construction and keyed cover control for safety. All SQUARE D Industrial Switches are tested at six times the normal horsepower load at low power factor corresponding to the "stalled rotor" condition in a motor circuit. » » More information? Just address your nearest SQUARE D Branch Office or write directly to the SQUARE D COMPANY, DETROIT, MICH.

Affiliated with
DIAMOND ELECTRICAL MANUFACTURING COMPANY, LTD.
Los Angeles San Francisco
Houston

SQUARE D COMPANY, CANADA,
LTD., WALKERVILLE, ONTARIO
Toronto Montreal

SQUARE D
COMPANY
DETROIT, U.S.A.

ELECTRICAL EQUIPMENT



Factories at:
DETROIT, MICHIGAN; MILWAUKEE, WISCONSIN; AND PERU, INDIANA

BRANCHES IN ALL PRINCIPAL CITIES

PL-22

Switches

METER SERVICE SWITCHES

"Square D" Without End Walls Live & Dead Fuse Type

METER TESTING

Number	Amps.	Pole	Fused	Neutral	Description	Price	
55211	30	2	1	Plug	Solid	\$ 2.35	
58211	30	2	2	Fused	Solid	2.95	
SK-916	30	2	1	"	Solid	2.95	
55311	30	3	2	"	Solid	3.70	
57311	30	3	2	"	Dead	3.70	
15211	30	2	1	"	Gang Type Fuse	2.80	
18211	30	2	2	"	Gang Type Fuse	3.35	
39231	30	2	1	"	Solid	4.40	
39331	30	3	2	"	Gang Type Acces. M. Fuses	5.20	
15311	30	3	2	"	Solid	4.15	
17311	30	3	2	"	Live	4.15	
58251	30	2	2	Cart.	Fused	Extra for End Wall	.30
26251	30	2	2	"	Cartridge	Live	3.30
57351	30	3	2	"	Solid	4.05	
28252	60	2	2	"	Fused	4.45	
27312	60	3	2	"	Solid	8.90	
14312	60	3	2	"	Live	19.80	
28253	100	2	2	"	Fused	15.05	
27313	100	3	2	"	Solid	15.95	
14313	100	3	2	"	Live	27.30	

NON-METER TEST TYPE

Number	Amps.	Pole	Fused	Neutral	Description	Price
26311	30	3	2	Plug	Solid	\$ 2.58
26351	30	3	2	Cart.	Plug Type Fuse Dead	4.05
SK-659	30	3	2	Cart.	Cart. Type Fuse Dead	4.60
SK-660	60	3	2	"	Cart. Type Fuse Dead	11.70
SK-674	100	3	2	"	Cart. Type Fuse Dead	19.20

POLYPHASE METER SERVICE SWITCHES

"Square D" Accessible Main Fuse Type

METER TEST TYPE

Number	Amp.	Pole	Fused	Price
30391	30	3	3 Cart.	\$10.65
30392	60	3	3 "	20.35
30393	100	3	3 "	30.00

NON METER TEST

Number	Amp.	Pole	Fused	Price
10391	30	3	3 Cart.	\$10.05
10392	60	3	3 "	18.60
10393	100	3	3 "	28.25

"Square D" Sealable Main Fuses

METER TEST TYPE

Number	Amp.	Pole	Fused	Price
36351	30	3	3 Cart.	\$11.00
36352	60	3	3 "	17.80
36393	100	3	3 "	26.50

NON METER TEST

Number	Amp.	Pole	Fused	Price
SK-671	30	3	3 Cart.	\$ 4.60
SK-672	60	3	3 "	11.70
SK-673	100	3	3 "	19.20

FITTINGS FOR STANDARDIZED SWITCHES

End Walls for 30 Amp. Switches	Price
60 & 100 Amp. Switches	.30
Trough Closing Plates No. 20533 & 34	.10
Connecting Through No. 20733-314 Long	.45
20738-312	.80
Universal End Wall & Shutters	.30
Meter Shutter only No. 24358	.15

OUTDOOR METER BOXES

SK2158 with Test Block	Enam. Galv.
	\$7.05 \$9.55
SK2156 without Test Block	4.85 7.30
12611 W. P. Meter Sw. Box	9.90

TYPE C

"Square D" Single Throw, Industrial Switches

Quick Break Only

Fused and Unfusible	250 Volts Fusible	575 V. AC with Arc Suppres.	Unfusible
Amps. 2 Pole	3 Pole	Amps. Description	3 Pole
30 #85251 \$3.20	#85351 \$5.20	30 575V. Fused....	46341 \$10.95
60 #46252 \$8.20	#46352 10.00	30-60 575V. Not Fused	41342 10.95
60 Solid Neutral #47312 9.10	15.50	60 575V. Fused....	46342 13.65
100 #45253 \$12.75	#45353 14.60	100 575V. Not Fused	41343 17.30
100 Solid Neutral #48313 14.60	100 575V. Fused....	46343 21.85	
200 #46254 \$20.00	#46354 26.40	200 575V. Not Fused	41344 29.15
200 Solid Neutral #47314 22.75	200 575V. Fused....	46344 38.25	

TYPE A WITH ARC SUPPRESSORS

"Square D", Industrial Quick Make & Break, Single Throw

230 V. DC. and AC. Fusible	250-600 V. DC. and 575 V. AC. Unfusible
Amps. 2 Pole	3 Pole
x30 #80351 \$13.65	#81252 9.55
60 #86252 13.65	#86352 18.20
100 #86253 20.90	#86353 27.30
200 #86254 36.40	#86354 40.95
x60 Amp. Sw. with 30 Amp. Spacing	(x=250 Volts only)

30 AMP. TYPE C

"Square D", Quick Break, Industrial, Single Throw

250 Volts	2 Pole	Description	Single Throw 3 Pole
No. 80251	\$3.20	Quick Make & Break	No. 89351 \$ 5.20
91251	2.65	Not Quick Break	91351 4.00
x90251	7.75	Quick Break Only	x90351 10.00

(x 60 Amp. Switches with 30 Amp. Clips).

MOTOR STARTERS

"Square D", Quick Make & Break, Single Throw

Numbers & Types	Amps.	Volts	2 Pole	3 Pole	4 Pole
76251-351-451 Cover Control	30	250 V.	\$15.50	\$16.40	\$22.75
76352-76452	60	250 V.	22.75	31.85	
76341-76441	30	575 V. AC	22.75	31.85	
69251-351-451 without Cover Cont.	30	250 V.	18.65	14.60	20.95
69352-69452	60	250 V.	20.95	30.00	
69341-69441	30	575 V. AC	20.95	30.00	
76251-351 Time Protective	30	250 V.	6.40	6.85	
SK2054 Time Protective	30	575 V. AC	13.65		
No. 98251 For Small AC & DC Motors up to 1/4 H. P. 220 Volts AC..			1.85		

TYPE "C" SWITCHES

Cutler-Hammer (T-V) Single Throw Industrial Type

Series 4131

250 Volts DC or AC Fusible	575 Volts	AC Fusible
Amps. 2 Pole	3 Pole	4 Pole
30 4131H2 \$ 3.20	4131H13 \$ 5.20	4131H24 \$10.90
60 4131H3 8.20	4131H14 10.00	4131H25 13.65
100 4131H4 12.75	4131H15 15.50	4131H36 36.40
200 4131H5 20.00	4131H16 26.40	4131H77 51.00
400 4131H6 49.15	4131H17 67.35	

125-250 Volt Solid Neut. Fusible Non-Fusible Type 250 DC 500-600 AC

250 Volt Solid Neut. Fusible	Non-Fusible Type 250 DC 500-600 AC
30 4131H39 \$ 6.75	4131H44 \$ 8.20
60 4131H40 9.00	4131H45 11.40
100 4131H41 14.60	4131H46 20.50
200 4131H42 22.75	4131H47 31.85
400 4131H43 63.70	4131H48 82.00

x30 Amp 250 Volts Only

ENTRANCE SWITCHES, LIGHT TYPE

Cutler-Hammer (T-V)

2 Pole	3 Pole
30 For Plug Fuses	4141H1&2 \$ 1.65
30 For 2 Blades-2 Fuses	4141H5 2.25
30 For Cartridge Fuses	4141H6&8 3.60
30 For Cartridge Fuses	4141H7 2.75
30 Non-Fusible	4141H23 2.35
60 For Cartridge Fuses	4141H13 7.80
100 For Cartridge Fuses	4141H18 10.30
100 For 2 Blades & 2 Fuses	4141H21 11.90

METER SERVICE SWITCHES

Cutler-Hammer (T-V) Without End Walls

Meter Test Type	Without End Walls
Live Fuse Type	
30 For Plug Fuses	4307H1&5 \$ 2.95
30 For Cartridge Fuses	4307H2&6 3.50
60 For Cartridge Fuses	4307H3&7 8.45
100 For Cartridge Fuses	4307H4&8 15.05
Dead Fuse Type	
30 For Plug Fuses	4309H1 2.40
30 For Cartridge Fuses	4309H4 3.80
60 For Cartridge Fuses	4309H7 12.00
100 For Cartridge Fuses	4309H10 21.20

SAFE-LOCK METER SERVICE SWITCHES

Cutler-Hammer (T-V) Without End Walls

Meter Service Type	Without End Walls
All 230 V.-A. C.	
Sealed Fuses-Meter Test 3 Phase 3 Wire..	\$11.35 \$17.60 \$27.30 \$37.20
Access. *	13.85 23.45 50.15 90.65
*	11.45 21.15 30.80 66.00
*	15.60 37.00 53.00 98.00
"Non"	10.85 19.35 29.05 48.40
*	11.45 21.15 30.80 56.35

UNIVERSAL METER SERVICE SWITCHES

Cutler-Hammer (T-V)

No.	Without End Walls	Branch Circuit Type	Price
4311H1	All 30 Amp. Standardized Meter Service Switches		\$3.70</td

Switches

Switches

TYPE "A" SWITCHES
Single Throw—Series 4111

	Fusible 250 Volt DC or AC	Fusible 575 Volt AC					
Amps.	2 Pole	3 Pole	Amps.	2 Pole	3 Pole		
30 4111H1	\$10.90	4111H20	\$13.65	30 4111H11	\$16.40	4111H31	\$20.95
60 4111H2	13.65	4111H21	18.20	60 4111H12	17.30	4111H32	20.95
100 4111H3	20.95	4111H22	27.30	100 4111H13	27.30	4111H33	31.85
200 4111H4	33.40	4111H23	41.00	200 4111H14	42.80	4111H34	52.80
400 4111H5	68.25	4111H24	91.00	400 4111H15	100.00	4111H35	109.20
	Non-Fusible 250DC or 500-600 AC						
	Amps.	2 Pole	3 Pole	Amps.	2 Pole	3 Pole	
x30 4111H74	9.55	4111H81	11.40	200 4111H77	\$28.20	4111H82	40.60
30-60 4111H75	13.65	4111H85	15.95	400 4111H78	81.90	4111H88	91.00
100 4111H76	20.95	4111H86	24.10		x250 V. only.		

MOTOR STARTING SWITCHES

	Manual Operated	T-V				
Series	Description	Amps	Volts	2 Pole	3 Pole	4 Pole
4151H1	Light Duty Motor Sw. 1/4 HP or Less.	30	115	\$ 1.65	.....	.....
9115H1	Motor Switch with Thermal Cutout.	30	To 550	.....	\$13.90	\$19.30
4231H	For infrequent Duty.	30	220	6.50	6.85	9.75
4246H	For infrequent Duty 5 HP.	30	220	12.55	13.20	16.65
4246H	For infrequent Duty 7 1/2 HP.	30	440	19.65	23.65	.....
4246H	For infrequent Duty 7 1/2 HP	60	220	17.30	19.65	26.85

SMALL ENTRANCE SWITCHES

	Trumbull Electric	Closed or Open Ends			
Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
5790 EW Porc. Base.	30	125	For 1 Plug Fuse.	\$1.65	.....
5791-2-3-4 & 5893	30	125	Plug Fuses.	3.45	.....
5891-5892 Porc. Base	30	125-250	" "	1.85	2.40
13840-13841 Kappa	30	250	No Fuse-Slate Base.	2.75	4.10
13842-43 & 13743 Kappa	30	250	For Enclosed Fuses.	2.75	4.35
13221-13321 Quick Break	30	250	" "	3.55	5.20

STANDARDIZED MAIN ENTRANCE SWITCHES

	Trumbull Electric	Single Phase or DC Solid End Plate
16361 to 16368	30	125-250
16371	30	125
16381	60	250
16391	100	250

STANDARDIZED METER SERVICE SWITCHES

	Trumbull Electric	For Meter Testing Open End Without End Walls
16300 to 16309	30	125-250
16315	30	125
16330	60	250
16341	100	250

ACCESSIBLE FUSE METER SWITCHES

	Trumbull Electric	With Test Blades With and Without End Walls
18111	30	125
18111-18311	30	125
18121	30	125-250
18221-18321	30	125
18122-222-322	60	125
18123-223-323	100	125

Without Test Blades

	19111	19211-19311	19121	19221-19321	19222-222-322	19223-223-323
	30	125	For 1 Plug Fuse....	\$ 3.35	.....	.....
			Plug Fuses....	3.70	4.05	4.05
			1 Enclosed Fuse	3.95	.....	.....
			Enclosed Fuses.	4.65	4.65	4.65
				14.50	15.85	15.85
				23.35	24.65	24.65
†No End Walls.						

SEALED FUSE METER SWITCHES

	Trumbull Electric	With Test Blades With and Without End Walls
15827	30	125
28111-28311-28311	30	125
28121	30	125
28221-28321	30	125-250
28122-28222-28322	60	125
28123-223-323	100	125

UNIVERSAL METER SERVICE SWITCHES

	Trumbull Electric	Without End Walls
9711-123	30	125
972-123	30	125
973-333	30	125
975-333	30	125
979-333	30	125

POLYPHASE ENTRANCE & METER SWITCHES

	Trumbull Electric	30 Amp.	60 Amp.		
Series Nos.	Style	3 Wire	4 Wire	3 Wire	4 Wire
16379	Entrance—"DO-ALL"	\$ 4.70	.....	.....	.....
15321-15623	Acc. Fuse—Test Conn.	11.60	\$15.60	\$21.10	\$37.00
17321-17623	Acc. Fuse without Test Conn.	10.95	12.80	19.40	22.00
26321-26623	Sealed Fuse with Test Conn.	11.50	14.40	17.60	33.50
15321-15623	Acc. Fuse—Test Conn.	.....	.....	100 Amp.	.....
17321-17623	Acc. Fuse without Test Conn.	.....	.....	30.80	\$47.50
26321-26623	Sealed Fuse with Test Conn.	.....	.....	27.30	44.00

END WALLS, SHUTTERS, TROUGHS, ETC.

Trumbull Electric

	30 A.	60 A.	100 A.
End Wall One Piece for Standardized Switches.	\$.30	\$.50	\$.80
End Wall One Piece for Polyphase Switches.	.30	.50	.80
Shutters for End Walls for Standardized Switches.	.15	.30	.30
Shutters for End Walls for Polyphase Switches.	.15	.30	.30
Troughs 2-3" & 4" .40 5" .45 6" .50 7" .55			

TYPE "A" INDUSTRIAL SWITCHES

Trumbull Single Throw, Quick Make & Break

	230 Volts Fusible	230 Volts—No Fuse
Amp.	2 Pole AC-DC 3 Pole AC Only	2 Pole AC-DC
30	72221 \$10.95 72231 \$13.65	36221 \$ 9.60
60	72222 13.65 72232 18.20	36222 11.85
100	72223 20.95 72233 27.30	36223 20.00
200	72224 36.40 72234 41.00	36224 25.50

Trumbull "SNUF-ARC" TYPE

	Fusible	No Fuse
2P. 230-575	3P. 230-575	2P. 575V
AC & DC	AC & DC	AC Only
30...72261 \$16.40 72261 \$20.00	36261 \$12.75	36231 \$11.40
60...72262 17.30 72262 21.00	36262 13.65	36362 15.95
100...72263 27.30 72263 31.85	36263 20.95	36363 24.10
200...72264 43.25 72264 52.80	36264 28.30	36364 34.60

*230 V. A.C. no "Snuf Arc"

TYPE "C" SWITCHES

Trumbull Single Throw, Quick Make & Break

	230 V. No Fuse
Amp.	2 Pole AC-DC 3 Pole AC Only
30	40221 \$ 5.50 40231 \$ 6.85
60	40222 8.20 40232 10.00
100	40223 12.75 40233 15.50
200	40224 20.00 40234 26.40

WESTINGHOUSE

ALL 30 AMP. PORCELAIN BASE

	2 Pole	3 Pole
"Midget"—S. N.—1 Blade—1 Fuse—#62012 & #62163	\$1.65	.....
Type "00" Fusible—125-250 V.—Plug Fuses. 60069	1.65	#60961 \$3.00
—S. N. 3 Blades	.....	60962 3.00
—Not Fusible—2 Blades—250 Volt. 60090	2.55	62352 2.70
—Fusible Cart. Fuses—250 V. 60089	2.45	62365 4.00
—S.N. 250 V. 60089	.....	62351 3.20
Type WK-45" Fusible Cart. Fuses—250 V. 60089	.....	62364 4.30
Blades—250 V.	.....	545101 5.20
Type WK-45" S. N. Fusible Cart. Fuses—250 V. 60089	5.20	545341 5.20
2 & 3 Blades—250 V.	.....	545301 4.20
Type WK-45" Non-Fusible—2 and 3 Pole	.....	545001 4.20
—3 Blades—	.....	545001 4.20

TYPE C METER ENTRANCE

Westinghouse "WK-62" Quick Break

	2 Pole Fusible	3 Pole Fusible	4 Pole Fusible
60 Amp.—230 Volts.	.....	62304 \$ 9.15 62305 \$10.90	62307 \$13.60
100 "	—230	62308 13.60 62309 17.25	62311 20.05
200 "	—230	62312 21.80 62313 29.05	62315 47.20

SOLID NEUTRAL FUSIBLE

	2 Blades—2 Fuses	3 Blades—2 Fuses
60 Amp.—3 Poles.	62332 \$ 9.15	62306 \$10.90

Switches

TYPE "C" NON-INTERLOCKING—Continued

Single Throw

Not Fusible

Type "C"

	3 Pole 2 Blades	4 Pole 3 Blades	5 Pole 4 Blades	
Solid Neutral Blades Omitted	230 V.-AC & DC	115-230 V.-AC	115-230 V.-AC	
x 30 Amp. Type C . . .	53211P \$ 2.50	\$ 2.50	\$ 2.50	
30 "	53211P 8.20	53211P \$ 6.40	53211P \$ 12.75	
30 "	53221P 8.10	53221P 11.40	53221P 20.00	
60 "	53223 14.00	53223 20.50	53223 36.00	
100 "	53224 22.75	53224 31.85	53224 51.00	
200 "	53225 63.75	53225 82.00	53225 122.00	

xThis Switch for 125 Volts Ed. Plug Fusible.

	2 Pole	3 Pole	4 Pole
30 A. 2 Pole—250 Volt.....	53221S \$ 3.20	53221S \$ 4.00	53421S \$ 5.90
30-60 A. DC and 230 Volts.....	53221S 8.15	53221S 8.65	53422 13.60
100 A. AC 3 & 4 Pole.....	53223 10.90	53223 12.25	53423 20.90
200 A. 230 Volts.....	53224 19.00	53224 22.70	53424 38.10
400 A. AC Only.....	53225 36.30	53225 47.20	53425 63.50

30 AMP. SERVICE ENTRANCE SWITCHES

Bulldog

2 Pole—125 Volt—Fusible—For Plug Fuses No. 100211 S & P.....	\$ 1.65
Quick Make & Break 104211S.....	2.75
2 Pole—250 Volt—Fusible—For Cart. Fuses 100221 S & P.....	2.50
2 Pole—250 Volt—Not Fusible—For Cart. Fuses 103221 S & P.....	2.75
3 Pole—115 Volt—Fusible—For Plug Fuses No. 100311 S & P and 101311P.....	3.00
3 Pole—115 Volt—Fusible—For Plug Fuses Quick Make & Break 104311S.....	4.35

"TYPE A"

Bulldog Single Throw Quick Make and Break

	2 Pole	3 Pole	4 Pole
250 V. DC & 230 V. AC Fusible No.	Price	No.	Price
30 Amp.....	10221 \$10.90	10321 \$13.60	10421 \$16.35
60 Amp.....	10222 13.60	10322 18.15	10422 21.80
100 "	10223 20.90	10323 27.25	10423 36.30
200 "	10224 36.30	10324 40.85	10424 54.45
400 "	10225 68.10	10325 82.50	10425 107.25

575 Volts—AC Fusible

	2 Pole	3 Pole	4 Pole
30 Amp.....	10261 \$16.35	10351 \$19.25	10451 \$24.50
60 "	10262 17.25	10352 20.90	10452 26.30
100 "	10263 27.25	10353 31.75	10453 41.75
200 "	10264 42.65	10354 52.65	10454 63.50
400 "	10265 90.75	10355 99.00	10455 128.00

	230 V. AC, D.C. 575AC.ArcChok 575AC.ArcChok.
30 Amp. 230 Volts only.....	13221 \$11.85
30-60 Amp.....	13222 \$11.80
100 "	13223 19.95
200 "	13224 25.40
400 "	13225 54.45

	600 V.—AC/DC
30-60 Amp.....	13262 \$12.70
100 "	13263 20.40
200 "	13264 27.65
400 "	13265 66.25

COMPENSATOR SWITCHES

Bulldog Quick Make & Break Fusible

Amps.	230 Volt AC	4 Pole
30 A.	30321 \$16.35	30421 \$21.80
60 A.	30322 17.45	30422 26.30
100 A.	30323 28.15	30423 47.20
200 A.	30324 47.90	30424 65.35
400 A.	30325 76.25	30425 118.80

Amps.	575 Volts AC Arc Chokers	3 Pole
30 A.	30351 \$18.35	
60 A.	30352 19.25	
100 A.	30353 29.95	
200 A.	30354 50.85	
400 A.	30355 81.70	

MOTOR STARTERS

Bulldog

	3 Pole	4 Pole
30 Amp.—Type A—230 Volts AC.....	40321 \$16.35	40421 \$22.70
60 "	40322 22.70	40422 31.75
30 "	40341 22.70	40441 31.75
60 "	40342 32.70	

NOTE: For Bulldog Switches not listed deduct 10% from Bulldog Lists.

SMALL ENTRANCE SWITCHES

Columbia, 30 Amp.

Description	2 Pole
Single Fused Single Blade-125 Volt-Plug Fused	320-321 \$1.50
Double " " 125 " " "	1030 1.55
" " " 250 " Cartridge Fused	322 2.25
" " " 250 " " "	422 2.50

Description	3 Pole
Single Fused-Single Blade-125 Volt-Plug Fused	1931-3 \$2.15
Double " " 125 " " "	3931-2 2.45
" " " 250 " Cartridge Fused	322 4.00
" " " 250 " " "	422 4.40

Electrical Contracting, February, 1931

BRANCH CIRCUIT ENTRANCE SWITCHES

Columbia

30 Amp. Series	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
2401 to 2406	\$3.90	\$4.90	\$5.20	\$5.85	\$6.20
3401 to 3406	4.90	6.20	6.50	7.15	8.45
3501 to 3506	4.75	5.85	6.20	6.90	8.45

INDUSTRIAL SWITCHES

Columbia

Series 70 Type C Fusible					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
250 Volts Fusible	30A C7001 \$ 9.30	60A C7004 12.00	100A C7007 18.85	200A C7008 23.65	300A C7011 34.65
Quick Make & Break	300A C7010 27.95				

Series 70 Type A Fusible					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
250 Volts Fusible	30A A7001 10.30	60A A7004 13.10	100A A7007 21.45	200A A7008 27.50	300A A7011 38.35
Quick Make & Break	300A A7010 30.50				

Series 71-500 Volts Fusible					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
500 Volts Quick Make & Break	30A 7101 \$13.60	60A 7104 14.00	100A 7107 23.50	200A 7110 37.70	300A 7111 42.25

Series 73-600 Volts Unfused					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
600 Volts Quick Make & Break	30A 7201 \$10.80	60A 7204 10.80	100A 7207 24.10	200A 7210 38.60	300A 7211 42.50

Series 74-600 Volts Unfused					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
600 Volts Quick Make & Break	30A 7401 \$11.70	60A 7404 12.45	100A 7407 18.90	200A 7410 25.15	300A 7411 29.25

Series 20-250 Volts Fusible					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
Quick Break Only	2022 5.10	2025 6.85	2026 7.90		
250 Volts	100A 2028 10.85	200A 2031 19.10	2029 23.35		

Series 23-250-500 Volts Unfused					
Amps	2 Pole	3 Pole	4 Pole	6 Pole	8 Pole
Quick Break Only	2322 \$ 4.75	2325 8.95	2326 9.55		
250 Volts	100A 2328 11.35	200A 2331 19.10	2329 12.55		

MOTOR STARTING SWITCHES

Columbia, 250 Volts

	2 Pole	3 Pole
30 Amp. Motor Start Switch.....	6001 \$12.50	6002 \$16.70

COPPER HOUSING, TOTALLY ENCLOSING A SILVER-MIRRORED GLASS REFLECTOR. THE SILVERING IS PROTECTED BY AN ELECTROLYTICALLY DEPOSITED COPPER BACKING.

POSITIVE FOCUSING MECHANISM.

ALL PARTS ARE OF COPPER, BRONZE, OR OTHER NONFERROUS METAL.

THREE-POINT BASE

SIMPLE AND POSITIVE DOOR CLAMPS.

HEAT-RESISTING LENS BOTH CLEAR AND COLORED. ALL LENSES AND REFLECTORS INTERCHANGEABLE IN PROJECTORS OF THE SAME SIZE.

SPECIALLY TREATED GASKET MAKES PROJECTOR WEATHERPROOF

SWIVEL AND TRUNNION MAKE POSSIBLE ANY METHOD OF MOUNTING.

Type 31 G-E floodlighting projector

Floodlighting is their specialty --and why

IN response to a questionnaire distributed by ELECTRICAL CONTRACTING, 29 per cent of the electrical contractors reported a specialized interest in floodlighting.

There are two sound business reasons for this preference—the market and the profit.

The market is at the very door of every contractor. The commercial world is turning to floodlighting as a conspicuous method of publicity. From office building to gas filling station—from bank to billboard—business men are learning the profit in thus interesting the public in the service or product that is for sale.

The profit extends beyond the sale of the projectors. It includes wire, cable, wiring devices, and installation. And, less tangible but equally important, the contractor gains added reputation by virtue of the publicity which his work receives.

Floodlighting specialists of the General Electric Company are always ready to assist contractors in making preliminary surveys of the local market, in helping to merchandise projectors, and in applying their technical experience to individual installations. Address the nearest office of General Electric Company, or of General Electric Supply Corporation.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

710-86

GENERAL  **ELECTRIC**
SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

ARROW

New Canopy Pull Switch

for "Type C" Lamps

RATING: 6 AMPS. 125 VOLTS; 3 AMPS 250 VOLTS

WIRED WITHOUT REMOVING MECHANISM

(Switch illustrated with fibre cover removed.)

Here's ease and economy of installation:—just slip off the fibre disc, attach the wires and replace the disc, bending down the tabs.

Made of lustrous brown BAKELITE instead of metal.

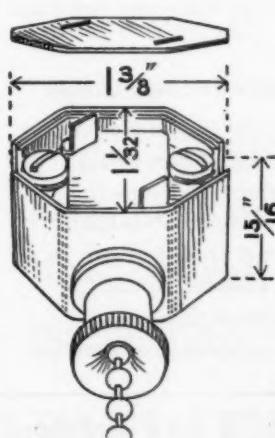
Possibility of shorting is eliminated. The current-carrying parts are enclosed in a BAKELITE compartment separated and insulated from all other metal parts.

Compactness of this switch makes installation possible in the smallest units; the hexagonal shape makes it applicable to shallow, modernistic canopies.

Approved by Underwriters Laboratories for 6 Amperes, 125 Volts; 3 Amperes, 250 Volts. Here are the numbers you'll need for specifying:

Cat. No.	List Price	★ DESCRIPTION ★
7743	\$1.50	7 inch chain, $\frac{1}{4}$ " stem
7744	1.50	7 inch chain, $\frac{3}{8}$ " stem
7745	1.50	Short chain, 4 ft. cord, $\frac{1}{4}$ " stem
7746	1.50	Short chain, 4 ft. cord, $\frac{3}{8}$ " stem

Standard package 100, Carton 10.



ALL BAKELITE

*The Smallest,
Most Compact
Canopy Switch
on the Market*

ARROW ELECTRIC DIVISION

THE ARROW - HART & HEGERMAN ELECTRIC CO.

HARTFORD, CONN.

BELL TELEPHONE

lessens lightless intervals

IN the new 209 West Seventh Street Building of the Cincinnati and Suburban Bell Telephone Company, lightless intervals caused by the opening of the circuit protective device are fewer and shorter because Nofuze Panelboards are used.



*Nofuze panelboard branch circuit breakers are as easily reclosed as a wall switch.



209 West Seventh Street
Building of the Cincinnati and Suburban
Bell Telephone Company. Electrical Contractor—Standish Electric Company, Cincinnati, Ohio.

The circuit is not opened on slight momentary overloads, yet the wiring is protected at all times and under all conditions. The calibration of the breaker cannot be altered, nor can the breaker be held closed against an abnormal overload.

After the overload that opened the circuit has cleared, a mere flip of the handle restores service. The nearest person can reclose the breaker with perfect safety. In addition, features such as the adjustable corner iron, the rabbet return molding and the indicating adjustable trim clamps facilitate installation, saving time and money.

Ask the Westinghouse office near you for complete information about this superior protective device now being installed in many new buildings throughout the country.

Some Important Installations

- Museum of the City of New York
- Camden County Court House
- Christ Hospital, Cincinnati
- Los Angeles Automobile Club
- Chesapeake & Ohio Railway
- Tennessee Eastman Kodak Co.
- Gulf States Steel Company
- Celanese Corporation of America

Service, prompt and efficient, by a coast-to-coast chain of well-equipped shops

Westinghouse



T 31668

TUNE IN THE WESTINGHOUSE SALUTE OVER THE N. B. C. NATION-WIDE NETWORK EVERY TUESDAY EVENING.

Wheeler

HIGH MOUNTING UNIT FOR INDUSTRIAL LIGHTING



NOW—another addition to the

Wheeler Line—a High Mounting Unit designed for the lighting of interiors from a greater height than usual. Unit is light in weight, easy to install, to wire and to maintain. Its special design concentrates the light directly downward, providing a high intensity of illumination on the working plane. An ideal unit for the lighting of high, narrow bays and craneways in Steel Mills, Foundries, Locomotive Shops, Hangars and similar interiors. Upon request, Wheeler Engineers will gladly submit recommendations for the use of this unit in any plant.

WHEELER LIGHTING

WHEELER REFLECTOR COMPANY, 275 CONGRESS STREET, BOSTON, MASS.

NEW YORK

CHICAGO

ATLANTA

CLEVELAND

Sales Office: St. Louis, Indianapolis, Los Angeles, San Francisco, Seattle. In Canada: Canadian General Electric Co., Ltd.

Switches

Diamond E Switches

SMALL ENTRANCE SWITCHES, 30 AMPS.

Volts	For Fuses	Description	2 Pole	3 Pole
125	Plug	All Fused	P-2	\$1.65
125	Plug	Ground Neutral	P-2S	\$2.75
220	Cartridge	All Fused	C-2	1.65
220	Cartridge	Ground Neutral	C-2S	2.25
				4.00
				2.90

ALL-N-ONE SWITCHES

Live Front	Double Fuse	Dead Front	Single Fuse		
No.	Circuits	Price	No.	Circuits	Price
A-2	2	\$3.45	AD-2	2	\$5.40
A-3	3	3.80	AD-4	4	5.85
A-5	5	4.15	AD-5	5	6.75
A-7	7	6.60	AD-6	6	7.95
A-9	9	6.95	AD-8	8	9.30
			AD-10	10	11.25

RANGE & WATER HEATER SWITCHES

60 Amp.—125 Volts

No. 501	No. 502	No. 503	No. 504	No. 505	No. 506	No. 507
\$9.90	\$15.25	\$23.00	\$26.75	\$20.25	\$8.90	\$13.90

MOTOR STARTING SWITCHES

MS-1 30 Amp. 3 Pole 220 Volts Quick Make & Break Toggle.....	\$6.00
C-3P 30 Amp. 3 Pole 250 Volts Not Toggle.....	7.10

SAFE LINE SERVICE SWITCHES

No. 904 Single Pole 4 Circuits with Transformer.....	\$7.85
" " " without Transformer.....	6.60

INDUSTRIAL TYPE

Quick Break—Single Throw—Fused Bottom

Amp.	No.	Price	No.	Price	No.	Price
30	3022	\$ 5.40	3032	\$ 6.75	3042	\$ 7.90
60	6022	8.10	6032	9.00	6042	11.65
100	10022	11.65	10032	13.30	10042	24.10
200	20022	18.25	20032	24.10	20042	39.75
400	40022	44.85	40032	61.50	40042	87.20
600	60022	78.00	60032	91.30	60042	131.10

250 Volts

Amp.	No.	Price	No.	Price	No.	Price
30	3025	\$ 9.00	3035	\$ 5.55	3045	\$ 12.45
60	6025	9.90	6035	10.80	6045	13.30
100	10025	13.30	10035	15.80	10045	26.60
200	20025	26.60	20035	30.00	20045	43.20
400	40025	68.00	40035	74.70	40045	116.20
600	60025	96.30	60035	103.00	60045	167.70

500 Volts

Amp.	No.	Price	No.	Price	No.	Price
30	3026	30.20	3036	30.20	3046	200 Amp.
Number.....	Price.....	\$15.30	\$15.30	\$25.00	\$38.60	100 Amp.

Not Fused—Quick Break

Single Throw—No Fuse	Double Throw—No Fuse			
250 DC	3022N			
30	3	\$ 5.00	3022N	\$ 10.80
30	3	250 DC	3032N	6.30
30	3	500 AC	3025N	8.65
30	3	500 AC	3035N	8.10
60	2	250-500	6025N	8.10
60	3	250-500	6035N	8.55
100	2	250-500	10025N	11.50
100	3	250-500	10035N	11.25
200	2	250-500	20025N	17.00
200	3	250-500	20035N	30.75
400	2	250-500	40025N	49.80
400	3	250-500	40035N	58.00
600	2	250-500	60025N	83.00
600	3	250-500	60035N	99.60

S-SUNDRIES

WOOD SCREWS

Flat Head

Size	Price	Per	Price	Per	Price
	Doz.	Doz.	Per	Doz.	Per
1/4 x 6 & Smaller	.05	1/4 x 12	.07	2 1/4 x 10	.08
1/4 x 8	.05	1/4 x 6	.07	2 1/4 x 12	.09
1/4 x 6	.05	1/4 x 8	.07	2 1/4 x 6	.07
1/4 x 8	.05	1/4 x 10	.07	2 1/4 x 8	.08
1/4 x 8	.05	1/4 x 12	.07	2 1/4 x 10	.09
1" x 6	.05	2" x 6	.07	2 1/4 x 12	.10
1" x 8	.05	2" x 8	.08	3" x 8	.09
1" x 10	.05	2" x 10	.08	3" x 10	.10
1 1/4 x 6	.06	2 1/4 x 12	.09	3" x 12	.13
1 1/4 x 8	.06	2 1/4 x 6	.07	3" x 14	.15
1 1/4 x 10	.07	2 1/4 x 8	.07		

NOTE—For Round Head Wood Screws Add 30% to above prices.

MACHINE SCREWS

Round or Flat Head

Size	Friction	Price per Dozen
	Iron	Brass
1/4 x 1 1/2	.05	.08
1/4 x 2	.05	.10
1/4 x 2 1/2	.05	.12
1/4 x 3	.05	.12
1/4 x 3 1/2	.05	.12
1/4 x 4	.05	.12
1/4 x 4 1/2	.05	.12
1/4 x 5	.05	.12
1/4 x 5 1/2	.05	.12
1/4 x 6	.05	.12
1/4 x 6 1/2	.05	.12
1/4 x 7	.05	.12
1/4 x 7 1/2	.05	.12
1/4 x 8	.05	.12
1/4 x 8 1/2	.05	.12
1/4 x 9	.05	.12
1/4 x 9 1/2	.05	.12
1/4 x 10	.06	.12
1 1/4 x 1 1/2	.06	.12
1 1/4 x 2	.06	.12
1 1/4 x 2 1/2	.06	.12
1 1/4 x 3	.06	.12
1 1/4 x 3 1/2	.06	.12
1 1/4 x 4	.06	.12
1 1/4 x 4 1/2	.06	.12
1 1/4 x 5	.06	.12
1 1/4 x 5 1/2	.06	.12
1 1/4 x 6	.06	.12
1 1/4 x 6 1/2	.06	.12
1 1/4 x 7	.06	.12
1 1/4 x 7 1/2	.06	.12
1 1/4 x 8	.06	.12
1 1/4 x 8 1/2	.06	.12
1 1/4 x 9	.06	.12
1 1/4 x 9 1/2	.06	.12
1 1/4 x 10	.06	.12
1 1/2 x 1 1/2	.06	.12
1 1/2 x 2	.06	.12
1 1/2 x 2 1/2	.06	.12
1 1/2 x 3	.06	.12
1 1/2 x 3 1/2	.06	.12
1 1/2 x 4	.06	.12
1 1/2 x 4 1/2	.06	.12
1 1/2 x 5	.06	.12
1 1/2 x 5 1/2	.06	.12
1 1/2 x 6	.06	.12
1 1/2 x 6 1/2	.06	.12
1 1/2 x 7	.06	.12
1 1/2 x 7 1/2	.06	.12
1 1/2 x 8	.06	.12
1 1/2 x 8 1/2	.06	.12
1 1/2 x 9	.06	.12
1 1/2 x 9 1/2	.06	.12
1 1/2 x 10	.06	.12
1 3/4 x 1 1/2	.06	.12
1 3/4 x 2	.06	.12
1 3/4 x 2 1/2	.06	.12
1 3/4 x 3	.06	.12
1 3/4 x 3 1/2	.06	.12
1 3/4 x 4	.06	.12
1 3/4 x 4 1/2	.06	.12
1 3/4 x 5	.06	.12
1 3/4 x 5 1/2	.06	.12
1 3/4 x 6	.06	.12
1 3/4 x 6 1/2	.06	.12
1 3/4 x 7	.06	.12
1 3/4 x 7 1/2	.06	.12
1 3/4 x 8	.06	.12
1 3/4 x 8 1/2	.06	.12
1 3/4 x 9	.06	.12
1 3/4 x 9 1/2	.06	.12
1 3/4 x 10	.06	.12
2 x 1 1/2	.06	.12
2 x 2	.06	.12
2 x 2 1/2	.06	.12
2 x 3	.06	.12
2 x 3 1/2	.06	.12
2 x 4	.06	.12
2 x 4 1/2	.06	.12
2 x 5	.06	.12
2 x 5 1/2	.06	.12
2 x 6	.06	.12
2 x 6 1/2	.06	.12
2 x 7	.06	.12
2 x 7 1/2	.06	.12
2 x 8	.06	.12
2 x 8 1/2	.06	.12
2 x 9	.06	.12
2 x 9 1/2	.06	.12
2 x 10	.06	.12
2 1/2 x 1 1/2	.06	.12
2 1/2 x 2	.06	.12
2 1/2 x 2 1/2	.06	.12
2 1/2 x 3	.06	.12
2 1/2 x 3 1/2	.06	.12
2 1/2 x 4	.06	.12
2 1/2 x 4 1/2	.06	.12
2 1/2 x 5	.06	.12
2 1/2 x 5 1/2	.06	.12
2 1/2 x 6	.06	.12
2 1/2 x 6 1/2	.06	.12
2 1/2 x 7	.06	.12
2 1/2 x 7 1/2	.06	.12
2 1/2 x 8	.06	.12
2 1/2 x 8 1/2	.06	.12
2 1/2 x 9	.06	.12
2 1/2 x 9 1/2	.06	.12
2 1/2 x 10	.06	.12
3 x 1 1/2	.06	.12
3 x 2	.06	.12
3 x 2 1/2	.06	.12
3 x 3	.06	.12
3 x 3 1/2	.06	.12
3 x 4	.06	.12
3 x 4 1/2	.06	.12
3 x 5	.06	.12
3 x 5 1/2	.06	.12
3 x 6	.06	.12
3 x 6 1/2	.06	.12
3 x 7	.06	.12
3 x 7 1/2	.06	.12
3 x 8	.06	.12
3 x 8 1/2	.06	.12
3 x 9	.06	.12
3 x 9 1/2	.06	.12
3 x 10	.06	.12
4 x 1 1/2	.06	.12
4 x 2	.06	.12
4 x 2 1/2	.06	.12
4 x 3	.06	.12
4 x 3 1/2	.06	.12
4 x 4	.06	.12
4 x 4 1/2	.06	.12
4 x 5	.06	.12
4 x 5 1/2	.06	.12
4 x 6	.06	.12
4 x 6 1/2	.06	.12
4 x 7	.06	.12
4 x 7 1/2	.06	.12
4 x 8	.06	.12
4 x 8 1/2	.06	.12
4 x 9	.06	.12
4 x 9 1/2	.06	.12
4 x 10	.06	.12
5 x 1 1/2	.06</	

FRICTION TAPE—Concluded

		Per Pound	Per Half Pound	Per 2 Ounces	Per 1 Ounce	Per Foot
Grimshaw	"	2.00	1.00	.25	.15	.03
Holdfast	"	1.00	.50	.15	.10	.02
Holdtite U. S.	"	1.00	.50	.15	.10	.02
I X L	"	.75	.40	.10	.05	.01
Illinois	"	.55	.30	.10	.05	.01
Johns Manville Armature	"	1.75	.90	.20	.10	.02
" " Jomarco	"	1.00	.55	.15	.10	.02
" " White	"	1.35	.70	.20	.10	.02
" " No. 3 New No. 5	"	.55	.30	.10	.05	.01
" " No. 6 "	40.	.50	.25	.10	.05	.01
Jaxon	"	.60	.30	.10	.05	.01
Leader	"	.70	.35	.10	.05	.01
Manson	"	1.10	.60	.15	.10	.02
Magnat	"	.75	.40	.10	.05	.01
O. K.	"	.60	.30	.10	.05	.01
P & B.	"	.60	.35	.10	.05	.01
Paragon	"	1.65	.85	.20	.10	.02
Service	"	.90	.45	.15	.10	.02
Stanpat	"	.55	.30	.10	.05	.01
Sticks	"	.50	.25	.10	.05	.01
Security	"	.45	.25	.10	.05	.01
Victor	"	.55	.30	.10	.05	.01
Vim Gray	"	1.10	.60	.15	.10	.02

RUBBER TAPE

Amazon	Rubber	\$0.95	\$1.50	\$1.15	\$1.10	\$1.04
Alexall	"	1.20	.60	.15	.10	.04
Alpha	"	1.00	.50	.15	.10	.04
Brooklyn	"	.65	.35	.10	.05	.03
Clifton	"	.65	.35	.10	.05	.03
Dutch Brand	"	.65	.35	.10	.05	.03
Eisco	"	.60	.30	.10	.05	.03
G. E. 362	"	.55	.30	.10	.05	.03
Graybar Victor	"	.55	.30	.10	.05	.03
Holdfast	"	1.00	.50	.15	.10	.04
Imperial	"	.60	.30	.10	.05	.03
Illinois	"	.60	.30	.10	.05	.03
Okonite	"	1.35	.75	.20	.10	.04
Para	"	.75	.40	.10	.05	.03
Pittsburgh	"	.55	.30	.10	.05	.03
Relic U. S.	"	.50	.25	.10	.05	.03
Security	"	.55	.30	.10	.05	.03
U. S. Rubber	"	.65	.35	.10	.05	.03
Twin Tape Rubber & Friction	"	.75	.40	.10	.05	.03
USCO Westinghouse	"	.90	.50	.15	.10	.04

COUCH TELEPHONES

VESTIBULE TYPE

No. 74 Armed Cord Receiver Type.....	\$25.00
No. 74A Swing Arm Receiver Type.....	37.30
No. 74C Cordless Loud Speaker Type.....	30.75
Above prices are for telephones complete but do not include for any call buttons.	
Add for buttons—Janitor Calling Buttons if fitted.....	.95
Add for Each Suite Calling Button.....	.95

SUITE TELEPHONES

Series 2809 to 2849 or 1909 to 49.....	Page 22 Bulletin No. 89 S. H. Couch Co.
Number of Buttons.....	0 1 2 3 4
Price Ea. Surface or Flush \$11.40.....	\$11.40 \$12.45 \$13.60 \$14.60

TELEPHONE CABLES

Number of Conductors	Braided Type "B"	Lead Covered Type "I"	
Number	Price per Foot	Number	Price per Foot
8	B-8	.14	L-8
12	B-12	.15 1/2	L-12
16	B-16	.18	L-16
21	B-21	.22	L-21
25	B-25	.24	L-25
31	B-31	.27	L-31
37	B-37	.30	L-37

TIME SWITCHES

ACE TIME SWITCHES—SELF WOUND

All AC or DC On and Off Types	Sgl. or Dble. Pole — 100 to 130 Volts — Up to 60 Cycle
	No. 35 \$45.00 No. E4 \$47.50 No. E6 \$50.00
	All Dble. Pole — 20 Amp. — 125 Volts Each Circuit

Two Circuit Types A2, B2, C2, E2, G2..... \$45.00

GENERAL ELECTRIC TIME SWITCHES

TYPE T-8C—Sgl. Pole

15 Amp. Indoor Service

Type	Cat. No.	115 V. Price	230 V. Price
T-8C1.....	34x979 to 984.....	\$22.00	\$23.00
T-8C3.....	34x985 to 990.....	23.00	24.00
T-8C4.....	34x991 to 996.....	22.00	23.00

TYPE T-9—Dble. Pole

20 Amp. In or Outdoor Service

60 and 50 Cycle..	10x637-40.....	40.00	41.00
40 and 25	10x641-44.....	40.00	41.00
Extra for Cutouts.....		4.00	4.00

HARTFORD TIME SWITCHES

Type	B Double Pole.....	10 Amp. \$36.00	20 Amp. \$39.00	30 Amp. \$42.00	50 Amp. \$50.00
C & D Double Pole.....		39.00	42.00	47.00	52.00
G Apt. Hall Light Control D. P.....		38.00		60.00	

HOROLECTRIC TIME SWITCHES

60 Amp. D. P. Eight Day Time Switch and Box.....	\$24.00
Automatic Electric Time Switch Motor and Box.....	32.00
Eight Day Time Motor.....	12.00
Automatic Electric Time Motor.....	20.00

RELIANCE & RACINE SWITCHES

	10 Amp. \$19.50	20 Amp. \$23.00	30 Amp. \$32.00	50 Amp. \$38.00
Racine Type 1R-2R.....				
Reliance Type 10-20-30-50.....	28.00	30.00	\$32.00	\$38.00
Reliance Type 15 Triple Pole.....	32.00			
Apartment House Types A-B-C-D-E-F-G 30.00		30.00		

SANGAMO TIME SWITCHES

All 20 Amp. 115 V.—15 Amp. 230 V.		A. C.	D. C.	D. C.
		115-230V	115 Volt	230 Volt
T or TC 1 Single Pole	Single Throw	\$40.00	\$45.00	\$47.30
T or TC 1 Double Pole	Double	42.50	47.50	50.00
T or TC 2 Double Pole	Single	45.00	50.00	52.50
T or TC 2 Double Pole	Double	47.50	52.50	55.00

SAUTER TIME SWITCHES

All 115-230 Volt A. C. & D. C. Single Throw.		Description	Price
No. 101	2	1 Clock operated, key wound 40 day clocks	\$52.00
111	10	1 " " " " 40 "	56.00
121	15	2 " " " " 40 "	60.00
201	2	1 Self winding	74.00
211	10	1 " " " " "	80.00
221	10	2 " " " " "	85.00
321	25	2 Motor operated self winding clocks	105.00
341	40	2 " " " " "	110.00
401	100	2 Motor operated Oil Break self winding clocks	190.00
431	200	2 " " " " "	250.00
461	300	2 " " " " "	280.00

TORK TIME SWITCHES OR CLOCKS

Description		Indoor	Outdoor	Switchboard
Single Pole 15 Amp. 125 Volt	\$115H	\$20.00	\$215H	\$27.50
Double Pole 30 " 250 "	\$130H	25.00	\$230H	\$32.50
Single " Double Throw	\$160H	25.00	\$260H	\$32.50

Contactor and Clock Combination

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H- 60 Amp. 2 Pole DC.\$70.00

#76102H-100 " " AC. 75.00 #75102H-100 " " DC. 125.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-100 " " DC. 125.00

Contactors and Clocks

#76102H-100 " " AC. 75.00 #75102H-100 " " DC. 125.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-120 " " DC. 125.00

Contactors and Clocks

#76102H-120 " " AC. 75.00 #75102H-120 " " DC. 125.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-140 " " DC. 145.00

Contactors and Clocks

#76102H-140 " " AC. 75.00 #75102H-140 " " DC. 145.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-160 " " DC. 165.00

Contactors and Clocks

#76102H-160 " " AC. 75.00 #75102H-160 " " DC. 165.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-180 " " DC. 185.00

Contactors and Clocks

#76102H-180 " " AC. 75.00 #75102H-180 " " DC. 185.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-200 " " DC. 205.00

Contactors and Clocks

#76102H-200 " " AC. 75.00 #75102H-200 " " DC. 205.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-220 " " DC. 225.00

Contactors and Clocks

#76102H-220 " " AC. 75.00 #75102H-220 " " DC. 225.00

Contactors and Clocks

#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-240 " " DC. 245.00

Contactors and Clocks

#76102H-240 " " AC. 75.00 #75102H-240 " " DC. 245.00

Contactors and Clocks

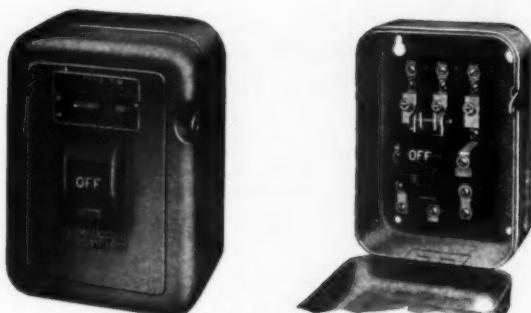
#76062H- 60 Amp. 2 Pole AC.\$50.00 #75062H-260 " " DC. 265.00

Contactors and Clocks

#76102H-260 " " AC. 75.00 #75102H-260 " " DC. 265.00

Contactors and Clocks

Safeguard Against Motor Failure



Catalog No. 91367

**BOX OVERALL DIM. 5 $\frac{1}{2}$ " W x 7 $\frac{7}{8}$ "
H x 4 $\frac{1}{2}$ " D**

1. Compactness—Note dimensions.
 2. Slow make—quick break.
 3. Double butt wiping contact under pressure.
 4. Will not open on voltage failure.
 5. Cannot be held against overloads.
 6. Handle returns to "off" position when switch trips on overload.
 7. Overload protection provided by readily interchangeable heater units.
 8. Particularly adaptable for "jogging".
 9. Rated 2 H.P. at 110-550 volts polyphase.

TRUMBULL

TYPE "TM2"

MOTOR STARTER

Large or small—motors need protection—it is not the size of the job performed but the importance that counts.

The new Type "TM2" or 2 H.P. manually operated motor starting switch with overload protection does safeguard motors.

It has already met with wide acceptance in the field proving the need for such a switch.

Interchangeable heater units ranging from $\frac{1}{2}$ to 10 amperes provide positive thermostatic overload trip—and the switch is capable of instantly breaking stalled rotor currents in excess of its rated capacity.

THE TRUMBULL ELECTRIC MFG. CO.



Branch Panelboard and Switchboard Factories:

Ludlow, Kentucky
Drendell-Trumbull
Electric Mfg. Co.,
See Franklin

San Francisco
Pacific Coast Division
Branch Switch, Switch-
board, and Panelboard
Factories:

Los Angeles Seattle

• 2014 年第 10 期 • 10

PLAINVILLE
CONN

PHILADELPHIA
511-519 N. Broad St.

ATLANTA

NEW YORK
803 Lincoln Bldg.

BOSTON
1002 Statler Bldg.

CHICAGO
2001 W. Pershing Rd.

Detroit branch
415 Brainerd St.

SAN FRANCISCO
432 Fourth St.





LIGHT AND POWER SPECIALIST:—Les Jager, Joliet, Ill., is very good at power and lighting, and keeps a fast and intelligent crew of men. In his lighting work he includes large electric signs. During the past year he has secured a large number of re-metering jobs, working with the power company.

(Continued from page 34)

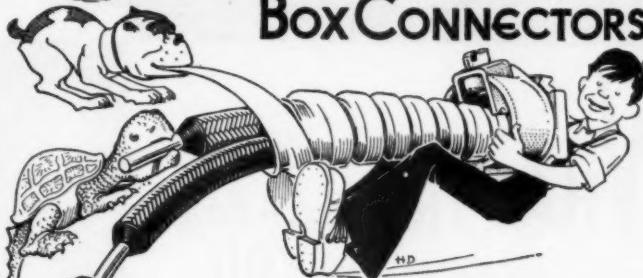
ably mean a new Code. Among the changes offered in Article 4—Services and Service Equipment, is the permission of the use of multiple conductor cable approved for the purpose of wiring on the exterior of buildings as described in paragraph e, Section 403.

Also paragraph b, Section 404, is changed to permit the use of bare neutral in services under certain conditions. Section 405 has been considerably enlarged providing, among other things, for the use of branch circuit breakers. The principal addition in Article 5 is a table of recommended conduit sizes for lead covered wires and cables. Also Section 506—Underfloor Raceways, has been entirely revised.

In Section 508, the $\frac{3}{8}$ -in. size of metallic tubing has been deleted. This section also provides for the use of metallic tubing for open or concealed work in dry locations where, during installation or afterwards, it will not be subject to severe mechanical injuries or corrosive vapors and it may be cast integral with stone aggregate concrete slabs or buried in masonry walls if provided with watertight fittings.

Section 511 permits a very limited use of semi-portable two-wire assemblies but is presented without recommendation by the article committee. A new Section 512 on Wireways replaces the former section which was

Straight and Angle TITE-BITE Box Connectors



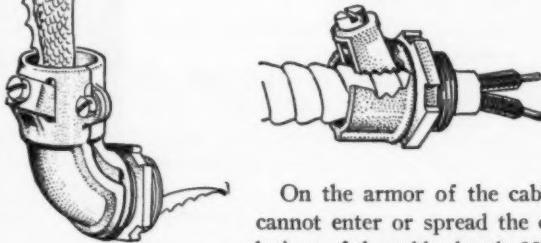
IN ALL SIZES

The Straight T&B Tite Bite connectors are now made in all sizes up to two inch.

The Angle T&B Tite Bite connectors are now made in all sizes up to three inch.

Each T&B Tite Bite connector, because of its design, will take a wider range of cable sizes.

THE TEETH IN THE GRIP FORM A TITE BITE



On the armor of the cable and cannot enter or spread the convolutions of the cable sheath. Notched locknuts hold the connector in place.

EASY AND SPEEDY—Angle Tite Bite connectors are made in two parts. One turn of the screws and the cap slips off. Lay the cable in place, slide the cap up, tighten the screws and the Tite Bite grip and the job is done.

The instant popularity of the Tite Bite has proved it the greatest advance in connector design in years. Write for samples.

THE THOMAS & BETTS CO.

MANUFACTURERS

General Sales Office and
Factory:
36 Butler St. Elizabeth, N. J.



WHAT THESE LABELS mean to YOU

Excellence in Quality and Fine Workmanship—Fretz-Moon Conduit is made from steel skelp by a patented "continuous" process which assures uniformity, safety and economy.

Strong Welds—Fretz-Moon Conduit is welded tightly and smoothly. The weld will not open.

Smooth Raceways—Fretz-Moon Conduit is coated inside with hard, glass-like enamel that will not crack or chip under severe strain.

Clean, Fast Threads—The threads on Fretz-Moon Conduit and in Couplings are cut deep, sharp and clean.

Increased Ductility—Fretz-Moon Conduit bends easily and smoothly.

Absolute Uniformity—in every length of Fretz-Moon Conduit.

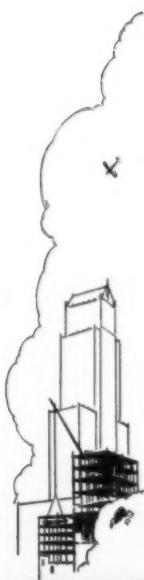
Rigidly Tested—Every length is rigidly tested and carefully inspected before the label is attached.

Protected Against Corrosion—Fretz-Moon Galvanized Brands are protected by zinc coatings that will not scale.

Long Life—Fretz-Moon Conduit defies time.

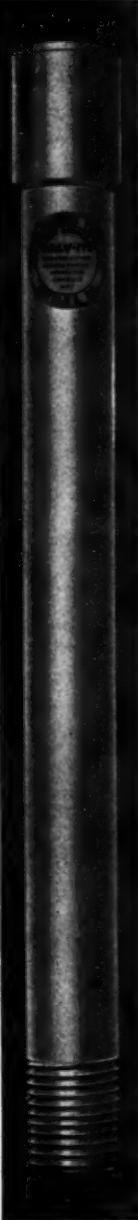
Any one of three Fretz-Moon labels—orange, ENAMELITE; red, GALVITE, blue, HOT DIPPED GALVITE—is your guarantee of positive satisfaction.

Use Fretz-Moon Conduit. It saves time and money all down the line.



Fretz-Moon Tube Company, Inc.
Butler, Penna.

FRETZ-MOON RIGID CONDUIT



combined with 500-e. Another new Section, 517—on Metal Enclosed Busways has been added.

Article 8 has been rearranged and is a little more complete and also includes synchronous motor wiring tables. Article 18 has been rewritten and extended and some small changes made in Article 31 in elevators. Article 32 has a new section known as Class IV Locations, which covers warehouses in which combustible fibres are stored.

A new section on portable switchboards has been added to Article 39. This committee also suggests Article 41 on emergency lighting and a subcommittee submits a report on sound recording and reproduction.

The above amendments to the Code are a few of those submitted and are, of course, only proposed and are subject to approval, amendment or rejection by the electrical committee.

Svendson Heads Minneapolis Contractors

George Svendson has been elected president of the Minneapolis (Minn.) Chapter of Electragists for 1931. Other officers elected are Carl Lindgren, vice-president; George Jones, secretary, and C. C. Courtier, treasurer. The board of directors comprise of Frank Langford of Langford Electric Co.; Frank Hurd, Hurd Electric Co.; J. Collias, Pierson-Wil-



SELLS EVERYTHING THAT GOES WITH THE JOB:—E. A. Croll, head of the Electric Engineering Co., Sioux City, Iowa, handles everything from an electric sign to an office building, but whatever it is he sells a complete job. He believes it is the contractor's place to see the extras that will be needed in the future and bring them up while the work is being done.



First...

UNKNOWN VALUES

by salesmen for an infant industry



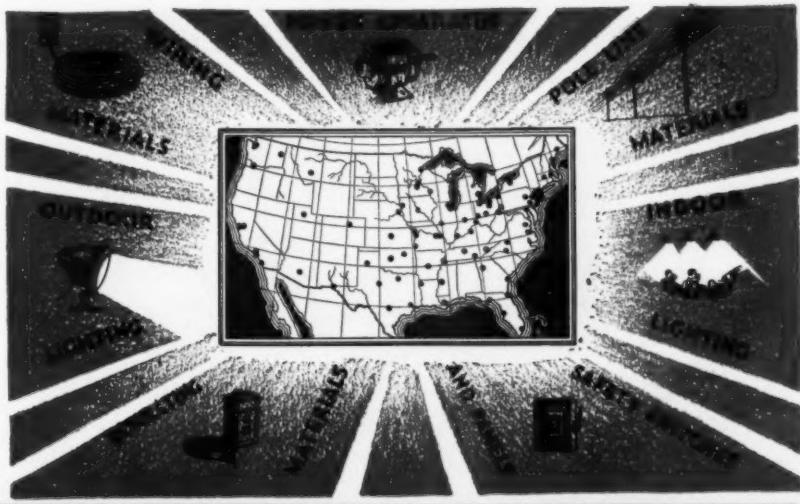
DEPENDABLE PRODUCTS

but distributed through uncoordinated channels

now...

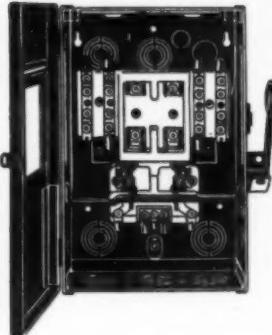
UNQUESTIONED QUALITY

*in a complete line of electric apparatus and supplies,
immediately available from more than 80 wholesale
warehouses, to every community in the United States*



GENERAL ELECTRIC
SUPPLY CORPORATION

WADSWORTH



ACCESSIBLE FUSE SAFETY SWITCHES

Catalog No. 1843
Accessible Fuse
60 Ampere Size

This Wadsworth Accessible Fuse Switch meets the continuous forward movement for

**"Safe"
"Adequate Wiring"**

Meter Service Switch Installations.

A switch that meets the requirements necessary for a Safe Service switch installation and the adequate wiring residence program.

Ample and simple wiring facilities and knock-outs that are easily and cleanly removed, assist contractors in making a neat, complete and satisfactory installation.

You can safely recommend the use of Wadsworth Accessible Fuse Safety Switches to your customers.

Write for Bulletin No. 21 for complete information.

The WADSWORTH ELECTRIC MFG CO. INC.
Corington, Kentucky

There is a Wadsworth Switch for Every Installation



IN CHARGE OF SOUND INSTALLATIONS:—Eric Dohna, of the Stevens-Fitch Co., New Haven, Conn. This company has installed most of the Vitaphone installations in their locality.

cox Electric Co.; F. M. Tripp, of Tripp Electric Co., and J. Semmer, of Semmer Electric Co.

A legislative committee of six members is cooperating with the state board and other branches of industry to formulate a new code to apply throughout the city and state, regardless of size of the city.

Des Moines Contractors Re-elect Officers

The Des Moines (Iowa) Chapter of Electragists re-elected the following officers to serve for 1931: R. W. Honegger, president; H. J. Towner, vice-president; C. S. Beymer, secretary and C. T. Whalen, treasurer. F. J. Moeckley will continue as manager. In addition to the officers, the following will serve on the executive committee: C. B. Fountain and J. W. Furlong.

1931 Plans for Birmingham Contractors

Relighting industrial plants is one of the campaigns planned by the Jefferson County Chapter Association of Electragists, Birmingham, Ala., during 1931. Additional campaigns planned consist of the sale of commercial lighting fixtures, office lighting fixtures, window lighting signs, industrial lighting and outside floodlights, cooperating with the Birmingham Electric Co. along the lines of its various selling campaigns now in progress or planned.

It has also been decided that the contractors will handle the installa-

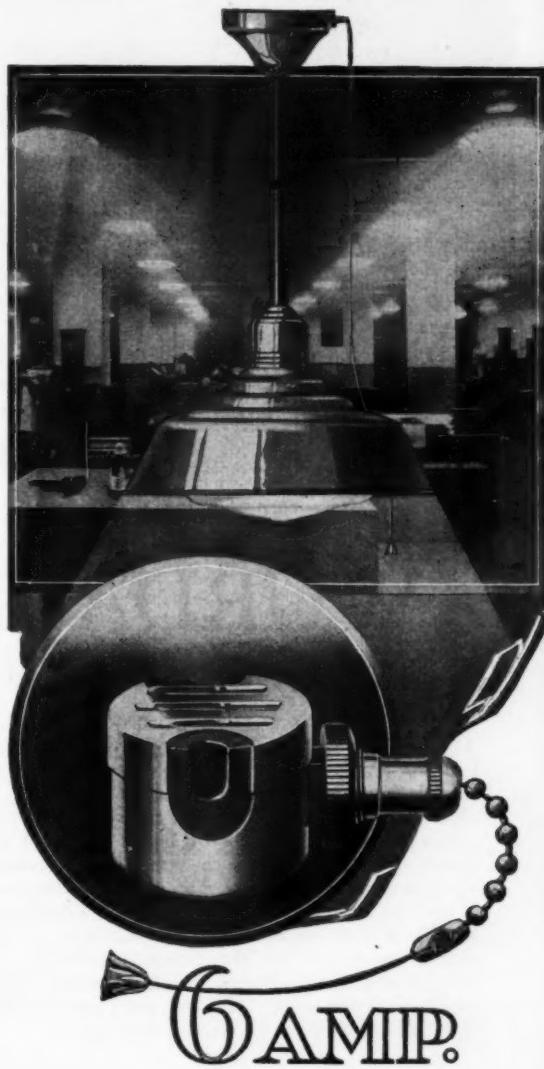
for Individual Economical Light Control The Levolier Switch

INDIVIDUAL control of light units is increasing in popularity. In office, factory and mill it means lights on over the bench, desk or machine where the man is at work and lights out where the man is absent. It means more accurate work, increased production and minimum cost for current.

The Levolier Switch is one of the smallest six Ampere Pull Switches made, yet has unusual carrying capacity for a switch so small. It takes the smash of repeatedly switching cold 500 watt lamps for thousands of makes and breaks.

Made in three different lengths of stems and as a link switch for ceiling fixtures. A Levolier Switch Bracket makes it possible to quickly put the Levolier Switch where you want it.

Send for your copy of the latest McGill catalog:
"Electrical Specialties of Quality."



6 AMP.

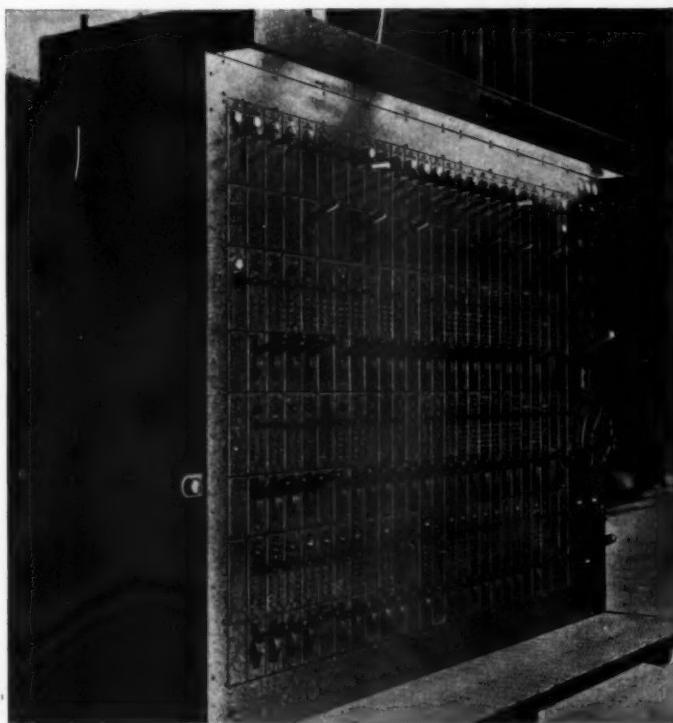


MCGILL
MANUFACTURING CO.
Electrical Specialties of Quality
ESTABLISHED 1904
VALPARAISO - INDIANA
Box No. 670



LAMP
Wire Lamp Guards
Portable Lamp Guards
Globe Guards
Colorless Fluid
Soldering Fluxes
Lamp Chargers

The Largest Portable Stage Switchboard in the World



Built by

WURDACK

for the New Orleans Auditorium

The switchboard installation in the magnificent New Orleans Auditorium represents an outstanding example of Wurdack engineering and craftsmanship. The huge portable stage switchboard shown above brings to its disappearing stage a flexibility of lighting control and a command of effects second to none in the country. It is equipped with 80 control units and 100 dimmers, and has a current handling capacity of 700 kilowatts. Twenty flexible rubber covered cables, containing a total of 300 wires, connect it to the terminal cabinet. Despite its weight of over three tons, it can be readily moved to any position on the stage. May we send you our folder which fully describes this Wurdack installation?

WM WURDACK

ELECTRIC MFG. CO.

4444 CLAYTON AVE., ST. LOUIS, MO.

See Sweet's catalogue for nearest branch office.

tion of all appliances sold by the Birmingham Electric Co. where it is necessary to do any wiring, and in conjunction with the company, the contractors will carry on a campaign on the installation of convenience outlets.

Changes in the Birmingham electrical ordinances will be made according to the National Electrical Code, when the new Code goes into effect.

New Officers in Youngstown

The 1931 officers elected by the Electrical Contractors Association of Youngstown, Ohio, are E. C. Carlson, president-treasurer; George N. Sandquist, vice-president and Carl Peterson, secretary.

It is planned by the association to have an industrial modernization and lighting campaign under way some time in the early spring, details of which will be given later.

Discuss Proper Methods of Estimating

The Mason City (Iowa) Chapter of Electragists hold weekly meetings for the purpose of discussing the proper methods of estimating jobs which will be of material assistance to electrical contractors. Each week one member of the chapter is delegated to report also on a particular



HAS SIX DEPARTMENTS:—C. W. Mills, of Clark & Mills, Boston, has six departments in his business, which include wiring, general store, major appliances, electrical fixtures, radio, and locks and keys. The book before him lists every item in stock and has index tabs so that one can turn instantly to the product and see at a glance, cost price, selling price, size, type, and maker of article.



A PROFITABLE INVESTMENT FOR EVERY CONTRACTOR

By adopting the NATIONAL ELECTRICAL RESALE PRICE SERVICE you are acquiring a "Silent Partner," who will work for you every hour of the day, every day of the week, without complaint — helping you to turn losses into PROFITS.

KEEPS YOU ON A SAFE COURSE

You, no doubt, buy right, but are you certain that your selling price includes a Profit? You don't want to overcharge a good customer, yet you are entitled to a fair price — take your customers into your confidence, show them the price in the book — this proves that you are prepared to give them the benefit of changes in prices as quickly as they occur, at the same time offers silent testimony that your prices are fair and that you charge everyone alike.

PAYS PROFITS

If you have been dissatisfied with your profits, here is something that will make money for you every day in the year. We have issued a little booklet which describes in detail this unusual Service that successful contractors are using daily to increase their profits, save time, and build customer confidence. Would you like to read it? It's yours for the asking; simply attach your letterhead to the coupon below.

Henderson-Hazel Corporation,
5005 Euclid Ave.,
Cleveland, Ohio.

Gentlemen:

Without obligation please send us your booklet describing the NATIONAL ELECTRICAL RESALE PRICE SERVICE.

Name.....

Address.....

City or Town.....

State.....

Let's Go!



If sitting around and worrying paid profits 1930 would have been a banner year. Why not expend the same energy in thinking up new ways to get more business or extra profits from the same job?

**Make One Job Pay
Two Profits.**

Every wiring job is an inside opportunity to make extra profit by selling ventilation. Every home, every store and every plant has some bad ventilating feature that a high grade fan will correct. Take along some

Meier Nu-air

TRADE MARK REG. U.S. PAT. OFF.

fan circulars on each job. (They're handy to carry in your coat pocket.) Give them to the proper man. Suggest the installation of a fan while you are doing the wiring. Do this right at the start of the job. Your presence, the circulars and a word dropped here and there about the improvement proper ventilation brings will bear fruit before you realize it. And remember you make more on the sale of a Meier Nu-air Fan than you do for your hard work on the wiring job. Let us explain our dealer proposition.

Write us today

MEIER ELECTRIC & MACHINE CO.
3525-3535 E. Washington Street
INDIANAPOLIS, IND.
Inc. 1904



MILWAUKEE LEAGUE PRESENTS STAGE SHOW: "Congratulations," an amateur stage presentation, was given by the Electrical League of Milwaukee, Wis., before members of the electrical industry on January 14. Over 650 persons attended this show, which proved very successful. The members of the cast shown above are, front row, left to right: R. E. Welton; The Turk Brothers and A. Gogan. Back row, left to right: George Gerber; D. B. Miller; J. P. Fryjoff; E. A. Marton; L. A. Selleg; J. M. Magnus; C. G. Matthews; C. W. Keller; P. W. McGeehee; G. H. Luedeking; H. H. Haage; W. O. Zervas; Geo. Schwarten; F. H. Price; P. W. Sprecher; R. G. Straight; N. O. Bolander; M. Lessenich; A. Thom; R. Muenchow; F. F. McCoy; and H. Ulezelski.

subject for the betterment of the business of electrical contracting. These meetings have proved of great assistance to the contractors of Mason City, one of the major things accomplished being a new ordinance which will pass the city council in the very near future.

**Texas Contractors Banquet
in Mexico**

The Rio Grande Valley Electrical Contractors and Dealers recently held their annual meeting with electrical jobbers and manufacturers at McAllen, Tex. The business meeting was devoted to the business policies and mutual interests of the contractors and jobbers.

The meeting was adjourned at 7:00 P.M. and the group crossed the line into Mexico, enjoying a banquet and entertainment at Reynosa. E. A. Shotts, president, and M. O. Burt, manager of the Texas Association of Electragists, were present.

Supports State Legislation

The Lake County Association of Electragists, Hammond, Ind., is supporting two bills being presented at the Indiana General Assembly now in session. L. J. Granger represented the chapter as a committee-man in the preparation of both bills.

The first bill presented by the Associated Building Contractors of Indiana provides for the registration and bonding of all general and subcontractors in Indiana, and the sec-

ond, presented by the Indiana Building Congress, provides for the examination and qualification of inspectors. Both bills are supported by various state organizations.

Paige Reelected President of Springfield Association

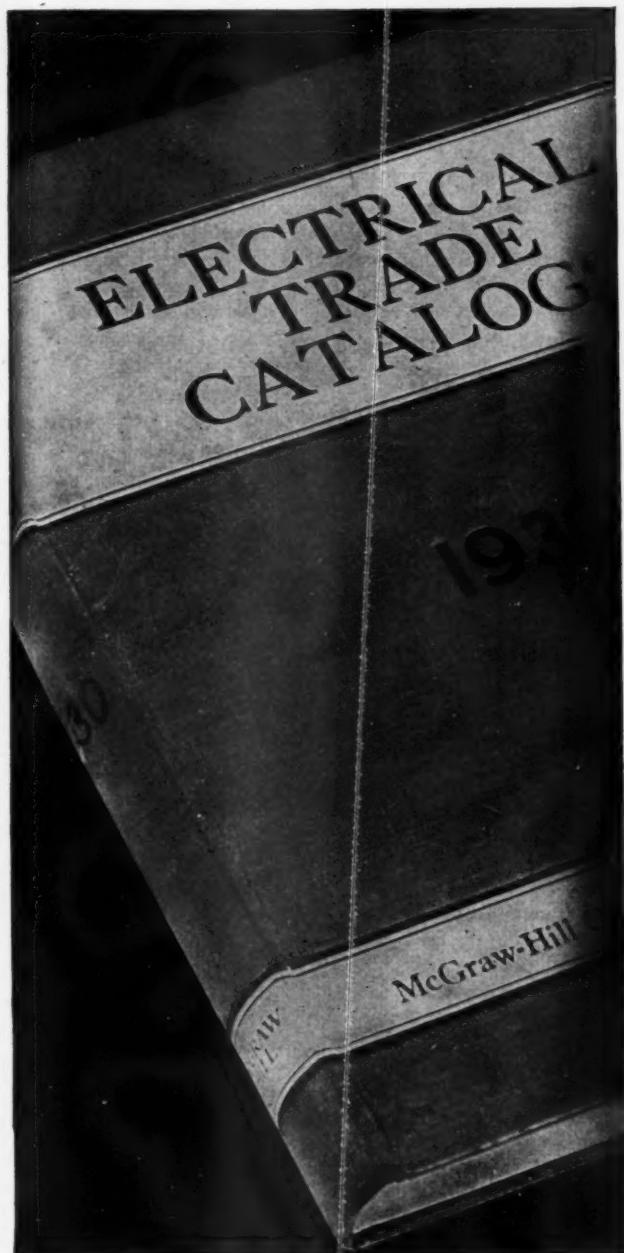
A. F. Paige was reelected president of the Electrical Contracting Association of Springfield, Mass. W. H. Grogan was elected vice-president and M. L. Schmidt, treasurer. Harry Heyman was reelected secretary. The board of directors comprise of A. F. Paige; W. H. Grogan; Mr. Crowley of Interstate Electric Construction Corp.; T. Tuohy of the Tuohy Electric Co.; J. Collins of Collins Electric Co. and Harry Heyman.

Asks for Trade Practice Conference in March

The Association of Electragists, Inc., has filed a formal request with the Federal Trade Commission for a trade practice conference of the electrical contracting industry under the auspices of the commission, and have asked the commission to call the conference, if possible, on March 18, at Kansas City following the general meeting of the A. E. I.

Twenty-six suggested rules of fair practice have been prepared by the A.E.I., having to do with important trade problems in the electrical contracting industry. These will be offered at the conference as a

*Turn to the binder
with the ORANGE BANDS
for buying details!*



The next time you want buying details on electrical supplies and equipment in a hurry turn to ELECTRICAL TRADE CATALOGS. You will find the catalog data of some hundred representative manufacturers in this handy catalog file.

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E-Z CONNECTORS
 (PORCELAIN)
**for Quick-Strong-Safe
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LOOK FOR THIS
 TRADE MARK ON
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**WHERE TO BUY
 "E-Z" Connectors**

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 S. A. Ram Co., Inc. (Oakland)

COLORADO

B & E Elec. Co. (Denver)

FLORIDA

Lighting Fix. Co. (Tampa)

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Interstate Elec. Co. (Baton Rouge)
 Interstate Elec. Co. (Baton Rouge)
 Lighting Fix. Co. (New Orleans)
 Interstate Elec. Co. (Shreveport)

MISSOURI

Great Chandelier Co. (St. Louis)

NEW YORK

L. A. Woolley, Inc. (Buffalo)

OREGON

Elec. Fix. & Sup. Co. (Portland)

PENNSYLVANIA

W. Phila. Elec. Sup. Co. (Philadelphia)

TEXAS

Dickert Elec. Co. (Dallas)
 Economy Elec. Sup. Co. (Dallas)
 A. F. Anderson Co. (Dallas)

Economy Elec. Sup. Co. (Fort Worth)

Lighting Fix. & Refn. Co. (Houston)

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Birkel Elec. Sup. Co. (Seattle)

PATENTED OCTOBER 21, 1930

(Other Patents Pending)

APPROVED BY UNDERWRITERS' LABORATORIES; HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO, CANADA; AND RECOMMENDED BY NATIONAL ELECTRIC CODE AND CITY INSPECTION DEPARTMENTS.

FREE SAMPLE—SEND COUPON

SIERRA PORCELAIN MFG. CO.
 311 TERMINAL SALES BLDG.
 747 WAREHOUSE ST.
 LOS ANGELES, CALIFORNIA

Please send me a sample of your "E-Z" Connector without obligating me in any way.

Name

Street & No.

City
 FEB. E.C.



IN BUSINESS 28 YEARS:—J. C. Hess of the Lancaster County Electrical Contractor & Dealers, Lancaster, Penna., has been in the electrical business 28 years and has always taken an active part in association work.

basis for discussion and with such changes or additions as the industry in conference shall itself decide, will be then submitted by the conference to the Federal Trade Commission for action under its established rules and procedure.

Over sixty chapters and affiliated associations throughout the country have joined with the A.E.I. in this request to the Federal Trade Commission, representing an annual volume of electrical contracting business around \$200,000,000.

New Type Armored Cable Improves Safety Record

It was reported in a Baltimore newspaper that the 1930 building department record, recently published, gives specific credit to the improved armored bushed cable as type of wiring, which has been helpful in increasing the department's record for providing the public with greater safety in building construction.

"Under the head of new features established during the year," the report states, "Mr. Hammond noted that the new electrical code has worked to the advantage of the bureau and the public. This code introduced a type of armored cable which is now being used extensively in all parts of the city, whereas under the old code its use was confined to the area outside the fire district. Because of the armoring the cable is now deemed as acceptable in high risk districts as in other parts of the city."

W. W. Fraser

W. W. Fraser, electrical engineer and contractor of Vancouver, B. C., passed away recently at his home in Vancouver. Mr. Fraser had been engaged in the electrical engineering business in Vancouver for the past 18 years, heading the electrical organization bearing his name.

Windeler Heads Toronto Contractors

Harry Windeler was elected president of the Toronto Electrical Contractors at their annual meeting. George Davenport was elected vice-president; P. A. Cheevers, treasurer and George Gander, secretary. The executive committee consists of H. Blenkarn; G. W. Leach; J. A. Craig; P. J. Dunn; H. C. Bertram and Gordon Alexander.

Resolutions were adopted at the December meeting to uphold the present city by-law regarding licensing of electrical installations. The present by-law will exist with only a slight change of the yearly fee.

Hold Twenty-Seventh Annual Dinner Dance

The twenty-seventh annual dinner and dance of the Independent Associated Electrical Contractor Dealers,

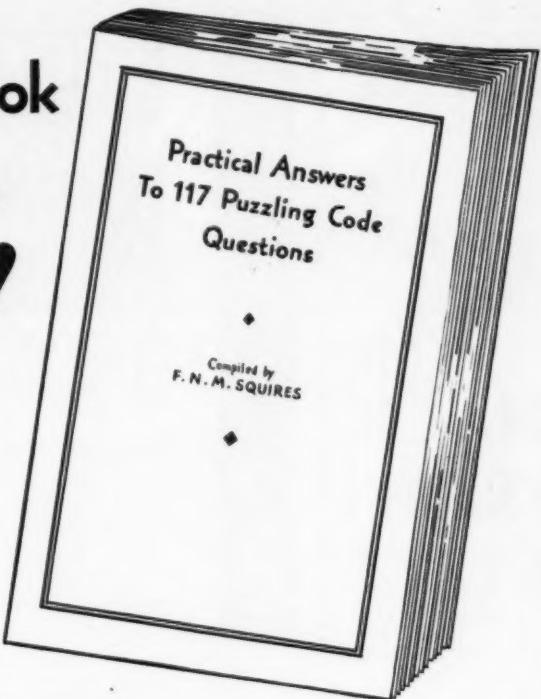


IN NEW BUILDING AT SAME LOCATION:—Ralph J. Vaughn, left, and L. A. Rose, of the Clapp Rose & Vaughn Co., Waterbury, Conn. This firm has recently moved into the new building erected on the site of their old location. In addition to operating a large contracting business this firm has a store and sales force that do canvassing on major appliances.

This New 114-Page Book on Code Questions

FREE!

WITH YOUR RENEWAL
SUBSCRIPTION FOR
ELECTRICAL CONTRACTING



One hundred and fourteen pages of interpretations of the National Electrical Code—That's what this new, helpful book "Practical Answers to 117 Puzzling Code Questions" contains for you.

Included in this book are also all of the Official Interpretations that relate to the 1930 Code. It is divided into 18 convenient sections, as follows:

General
Outside Supply Conductors
Services and Service Equipment
Wiring Methods
Conductors
Boxes, Cabinets, Fittings
Grounding
Rotating Machinery, etc.
Transformers not over 600 volts

Switchboards and Panel-boards
Fixtures and Other Outlet Devices
Electrical Appliances
Elevators
Hazardous Location
Garages
Signs and Outline Wiring
Theatres
Systems Over 600 Volts

All of the data was compiled by F. N. M. Squires, Assistant Chief Inspector, New York Board of Fire Underwriters, Chairman Article 5 Committee, and editor of "Code Chats" in ELECTRICAL CONTRACTING.

You may obtain a copy of "Practical Answers" absolutely FREE by extending your subscription now. Fill in the blank below, and mail it with your remittance today.

The Estimating Course Continues In This Issue

The second article in ELECTRICAL CONTRACTING'S 1931 Course in Profitable Estimating, appears in this issue. It gives a full description of the "Title Sheet" used in estimating, telling exactly what it is and how it should be used. Further installments will appear in every 1931 issue. Don't miss any of them. Every phase of estimating will be covered clearly and thoroughly. Assure yourself of receiving all 1931 issues by renewing your subscription today. Use the blank below, which also entitles you to a free copy of "Practical Answers to 117 Puzzling Code Questions".

ELECTRICAL CONTRACTING, 520 No. Michigan Ave., Chicago, Ill.

I Want a Copy - - - Send me at once, without charge, your new book "Practical Answers to 117 Puzzling Code Questions." At the same time renew my subscription to ELECTRICAL CONTRACTING for one year at \$2 for two years at \$3. My remittance is attached.

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STARTING*
HACK
SAW
BLADE**



The new MILFORD DUPLEX Patented Hack Saw Blade marks the most startling improvement in blade construction ever conceived.

Fine teeth on the forward end of this remarkable blade perform the same function as the feed screw of an auger bit—they start the cut quickly, easily, accurately.

Cutting cleanly into the metal precisely where you want it, on the first stroke, the MILFORD DUPLEX means the end of spoilage of work by slipping of blade, and of spoiled blades by ripping out teeth.

In addition to quick, straight cutting of regular work, it means that you can cut small sections, squares, angles or flat stock with equal accuracy at any angle.

Also made in Mil Flex Duplex, the quickest starting, easiest cutting blade for the electrical work. MILFORD DUPLEX, all hard; Mil Flex DUPLEX, hard teeth, flexible back.

Ask your Jobber

The fine tooth section of a 14-pitch DUPLEX has 23 teeth to the inch. The 18-pitch has 36 teeth to the inch.

Ask for
**MILFORD
DUPLEX**
PATENTED U.S.A.

The HENRY G. THOMPSON & SON CO.
Established 1876
New Haven, Conn., U. S. A.



TWENTY-TWO YEARS ON THE SAME SPOT:—The Hill Top Electric Shop has operated at 120 Brownsville Rd., Mt. Oliver, Pa. (a Pittsburgh suburb), since 1908. The head and founder of the firm is Louis R. Schmidt, who has his four sons with him in the business. Recently the company brought down the old place and built the fine building shown in one of the pictures. The other picture shows a portion of the store on the day of the grand opening.

Inc., was held January 14 at the Hotel Astor, New York City. Over 500 guests attended. At this time new officers for the coming term were installed. These were: John J. Bauer, president; H. M. Walter, first vice-president; Irving Gaynor, second vice-president; A. Lincoln Bush, treasurer; Nathan Loninsky, financial secretary; George W. Neil, recording secretary, and Zoltan Hartmann, sergeant at arms.

Allan Chantler

Allan Chantler, assistant secretary of the Electrical Association of New York died suddenly on December 24.

Mr. Chantler was born in Allegheny, Pa., 42 years ago and spent his boyhood in Pittsburgh. During the World War he served in the Ordnance Department U. S. A. and on receiving his discharge he did organization work for several electrical associations. When the Electrical Board of Trade was organized in 1923 he joined this body and became its secretary March 6, 1926. When the Electrical Association of New York was formed he was made assistant secretary and secretary of the Board of Trade Bureau of Adjustment.

Mackler Enters Advertising Field

Louis Mackler, formerly electrical engineer with the firm of L. T. M. Ralston, Inc., New York City, has been appointed consulting engineer to the P. F. O'Keefe Advertising Agency, Inc., New York City.

Mr. Mackler was in charge of the design of the plans and wrote the specifications for the complete electrical

installation in the Chrysler Building, New York City. The readers of ELECTRICAL CONTRACTING will recall an article of his entitled "Chrysler Building—Feeder Design", which appeared in the March, 1930 issue.

Western Inspection Executives Meet

The executive committee of the Western Section of the International Association of Electrical Inspectors, met in Chicago on January 19. The purpose of this meeting for the most part was the annual rearrangement and appointments on committees.

Ventilation Increases Business

(Continued from page 9)

know how to do. Due to this most of their customers when they want other work done call on them.

Because of their reputation, they are called into consultation both by architects and prospects, to help them solve their difficult ventilating problems.

This firm continually analyses its market. Only a short time ago they were called upon to do some wiring work for a smoked fish establishment. They had no sooner entered the place when they realized that it was a perfect prospect for a ventilating installation. Before they left they had an order in their hands for a large installation. There were eight or ten other such establishments around so they decided to do an intensive selling job. This has proved very effective and to date they have sold seven installations.

That is only one illustration of the many market analysis and intensive

selling campaigns conducted by this company. Through similar efforts this firm has made more than 600 ventilating installations. An analysis of these installations shows that approximately one residential installation is made to every 10 industrial and commercial installations.

How Contractors Sell

(Continued from page 7)

of the lighted projector which resulted in the lights going out below.

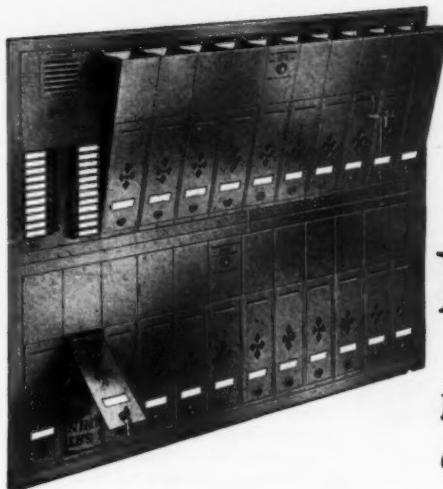
We then explained how a photoelectric cell was mounted on the third floor of our building with a relay connected to our service wires. As the projector light struck the photoelectric cell the relay connected to it switched on the lights inside our place of business and as the projector light went out the relay switch turned off the lights. At this point we were able to explain the practical application of photoelectric cells for the different production processes of the printing industry which later resulted in our making two such installations. Further than that the demonstration emphasized remote control and we have made a couple of installations as a result of it. After the demonstration we were also called in to check the electrical problems of a couple of plants where for some time we have been making efforts to sell our services. We know that their presence at the meeting and their interest in our demonstration prompted them to give us a trial.



WIRED THE NEW YORKER HOTEL:—Louis Freed of the Jandeous Electric Equipment Co., recently completed the wiring of The New Yorker Hotel, New York City, one of its newest and most up-to-date hotels, in addition to being one of the largest hotels in the country.

Couch
TELEPHONES
ESTABLISHED 1894

TELEPHONES



and
**MAIL
BOXES**

for every size
and class of

APARTMENT HOUSE

Farsighted electrical contractors, architects, and owners know the value of a reliable apartment house telephone system and should accept no substitute. Couch—first in the field in 1896—still sets the pace. Volume production permits “quality at no extra cost”. On your next phone job, call in Couch. Write for Bulletin No. 89E.

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MINNEAPOLIS, MINN.
MONTREAL, QUE.
NEW YORK, N. Y.
PHILADELPHIA, PA.
ST. LOUIS, MO.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.
TAMPA, FLA.
TORONTO, ONT.

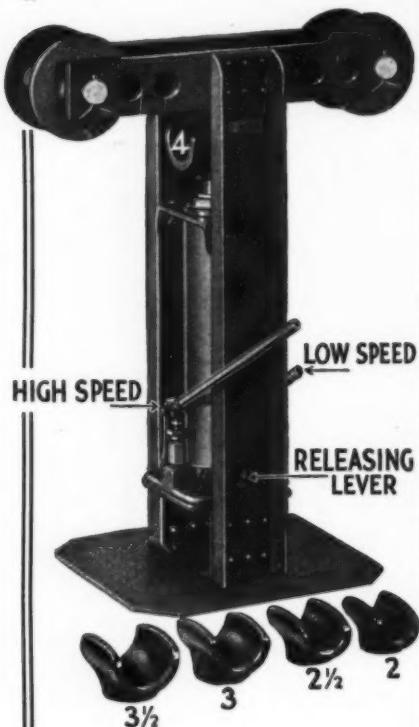
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170 Purchase St.
14259 Superior Rd.
806 W. Jackson Blvd.
2205 Leonard St.
1715 California St.
429 Wayne St.
202 Indiana Terminal Warehouse
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1017 Lumber Exchange
280 Craig St. West
11 West 42nd St.
1725 Sansom St.
917A Pine St.
301 Ninth St.
215 Second Ave.
5595 Central Ave.
231 King St. West

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Liberty 9254

Monroe 2840
7-6836
Keystone 6131
Cherry 3735
Riley 7825
Mutual 8151
Main 0726
Harbour 3136
Penn. 7217
Rittenhouse 4567
Garfield 0997
Hemlock 2314
Elliott 1544
McGraw 94
Adelaide 0097

PROFITS

In the electrical contracting business are largely determined by the methods and equipment used on the job.



No. 4 CHICAGO 30 TON HYDRAULIC BENDER

WILL enable you to bend any size of pipe or conduit from $1\frac{1}{4}$ " to $4\frac{1}{2}$ " quicker, easier and safer than it has ever been done before. Requires but one man to operate it.

Hundreds now in use making money for their owners.

Truly a profit maker for the electrical contractor.

Write for folder.

GUSTAVE LIDSEEN, INC.
832-840 So. Central Ave.
Chicago, Ill.

LIDSEEN



A ROLL O' TAPE

Electrical flashes gathered among the Big Wire-and-Pipe Men by

Coit A. (Duke) Smith
and Walter Holmes
Field Editors, ELECTRICAL CONTRACTING

H. MARSHALL SMITH of the Edward Eaton Co., New York, took an order for a new switchboard and feeders in an industrial plant. His only instructions from the customer were to supply a sufficient capacity for all additional needs during the next ten years. A lucky break for Smith? Perhaps, but lucky breaks have a way of coming to the contractor who, through knowledge and integrity, has won the confidence of his customers.

K. R. ANDERSON, Anderson Electric Co., St. Louis, Mo., has certainly rung the bell on the model electric home he wired in St. Louis Hills. The installation was so complete and the house attracted so much attention that a member of the real estate firm who built it decided to live in it himself.

SOMETIMES even your best friends won't tell you but W. E. Nichols, New York, never fails to remind his customers if the air is close in their places of business. Likewise he reminds them if their ventilating system is noisy or vibrates. Quite a number of ventilating jobs have been picked up in this way while he was doing other work in restaurants, stores, etc. He tells us that the job is not necessarily lost merely because the owner does not immediately order the work done. One job was obtained two years after it was suggested to the owner.

J. MANTIN, New York contractor, always starts the new year with a good job. For several years now he has gotten rewiring jobs due to fires that started on New Year's Day.

J. J. WHITMAN, of the Reading Electric Company, Reading, Pa., is another contractor who does a real selling job. On the county jail building

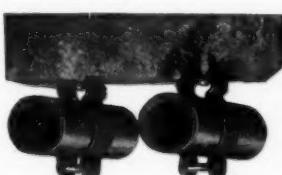
MINERALAC CONDUIT and CABLE HANGERS



Hanger with Porcelain Bushing



★ JIFFY CLIP



Hanger without Porcelain Bushing

One screw or bolt and Mineralac cable and conduit hangers are in place quickly and permanently. Made of high grade spring steel. All sizes from $\frac{3}{8}$ " to $2\frac{1}{2}$ " inclusive.

★ JIFFY CLIP

Accommodates pipe from $\frac{3}{8}$ " to $1\frac{1}{4}$ ". Requires but one screw. Jiffy made jobs are neat, secure and take less time.

MINERALAC ELECTRIC CO.
25 N. Peoria St. Chicago, Ill.



specifications called for steam cooking apparatus. Apparently it was ridiculous to attempt to sell electric stoves in this case. However, Mr. Whitman looked over the ground and found that, in addition to getting more satisfactory equipment, they could actually save money. His investigation showed that the coal for the building had to be hauled quite a distance, while the current was right at their door. There is a lot of additional work waiting for the contractor who will study the job to find reasons why its electrical work should be done.

THE Lancaster Electric Supply and Construction Company, Lancaster, Pa., appears to offer valuable experience as well as money to employees. Three local contractor-dealers got their early electrical experience working for this firm. It is an interesting fact that all three are now located in the same block and on the same side of the street.

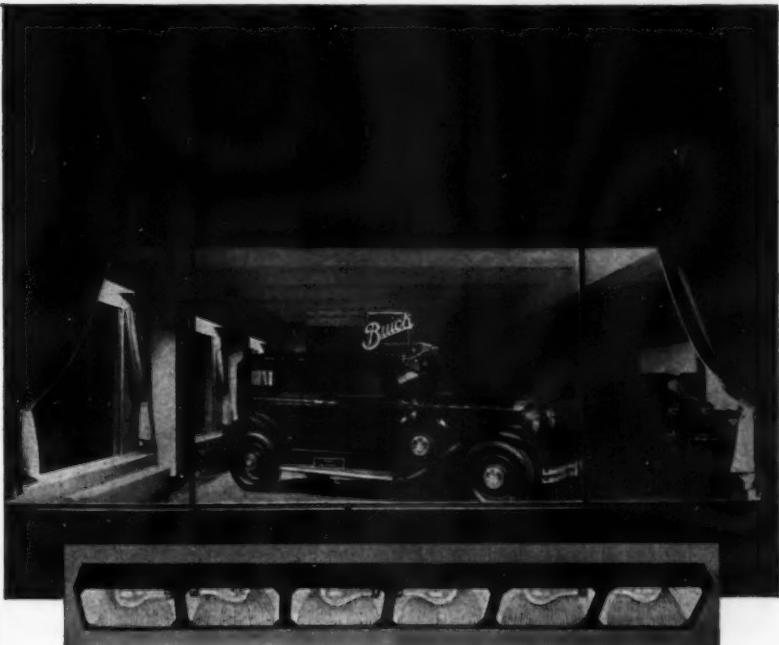
THE truth of the expression "practice what you preach" was brought home recently to an energetic contractor who is well versed in the sale and application of control equipment. We repeat this man is energetic even to the point of utilizing the soothing rays of a sun lamp when he is at ease. But being endowed with some human weaknesses, one evening he dosed off and fell asleep under the sun lamp. He woke up looking for rubber gloves to handle the hot wires that were singeing him, but instead found himself still exposed to an efficient though uncontrolled sun lamp that was steadily delivering the old ultra-violet. We are sure this particular lamp will be equipped with a time cut-off switch or a snore amplifier that will relay the sonorous waves to a sensitive switch which in turn will turn off the current. Anyone interested in the name of a good cure for sunburn write R. T. Hyre of "Hyre your responsible Electragist" of Chicago.

PROGRESS in the electrical industry offers the contractor new opportunities every day. I dropped into the Roxy Theatre, New York, and found that every seat in the house is wired. When a patron leaves his seat a contact is made on a board in the hall. By glancing at this board the ushers can see the number of vacant seats and their location.

J. T. DORNACHER, head of the Mound City Electrical Engineering Co., St. Louis, Mo., has a right to feel proud of the contract he has received from the Illinois Traction System. It is not only a huge job, but a very unusual one. First, there will be a 20-story Terminal Depot at Twelfth street and Lucas avenue. From there to Cass avenue the trains will run through a sub-

FRINK

MULTILITE REFLECTORS



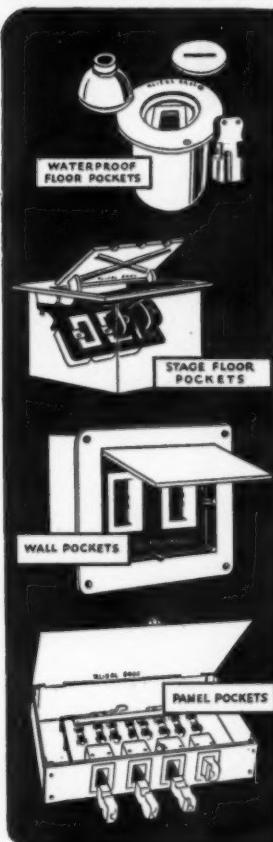
Buick show room in Mamaroneck, N. Y. equipped with Frink Multilite Reflectors, as follows: 2—10 light reflectors; 2—4 light reflectors; 3—8 light reflectors.

**There are quick...sure profits
in work like this**

The installation of Frink Multilite Reflectors in the show room illustrated above made a quick, sure profit for the contractor who was smart enough to recommend their use. This is just another instance of the vast amount of store illumination work available if you go after it with Frink reflectors.

Multilite is a unit fixture, consisting of a series of Silverlite Reflectors mounted in a metal trough, completely wired and ready to install. From two to ten reflectors come as a unit, wired with two circuits permitting of alternate and multiple control. Various intensities and color effects are easy to achieve. Send for circular 79-B for complete information.

THE FRINK CORPORATION
23-10 Bridge Plaza South . . . Long Island City, N.Y.



PLUG OUTLETS for High-amperage Circuits

To provide convenient facilities for connecting heavy-duty portable electrical apparatus to service lines—install Kliegl plug outlets. They will take care of demands ranging from 15 to 400 amperes, 125—250-volt circuits; with from one to eight or more outlets in a single box; are available in various forms of floor pockets, wall pockets, and panel pockets—and are used extensively in theatres, photographic studios, schools, hotels, assembly halls, industrial plants, and elsewhere.

Floor pockets for the stage are made with one to four plug receptacles and have a hinged self-closing cover, notched for passage of the cable. Waterproof floor pockets are made with a single plug outlet, and have a waterproof screw cap.

Panel pockets have fused receptacles, with two to eight 50-ampere plug outlets, and are made in various combinations when desired.

in special combinations when desired.
Write for full details on any or all of these
Kliegl plugging pockets, which are furnished
complete with plugs.

KLEEGI BROS
UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.
321 WEST 50th ST • NEW YORK, N.Y.

way and from there to McKinley Bridge the tracks will be elevated. The entire electrical installation will be made by his firm.

"I CAN rent you a pump and motor outfit for \$50 per month or sell it to you for \$150," said H. G. Roberts, of Roberts & Kanze, New York. The customer thought that over and finally decided to rent. The short time that the customer expected to use the outfit dragged into nine months. Mr. Roberts collected \$450, and still was the owner of the outfit. But this doesn't happen often enough to make motor renting a get-rich-quick game.

ANOTHER contractor expands after doing a nice job for many years. The Reliable Electric Service Co., of Arcadia, Wisc., has moved into a larger place in a new and better location. The improved arrangement provides better appearance and service both as to wiring and merchandise.

RECENTLY while talking with Richard I. Sedden, electrical contractor of Joliet, Ill., we got around to discussing differences of quality existing in materials and how they can be found if looked for. As an example he had to decide between two different brands of rubber tape, and that was the first time I saw a contractor subject rubber tape under a magnifying glass to see which one of the two vulcanized better.

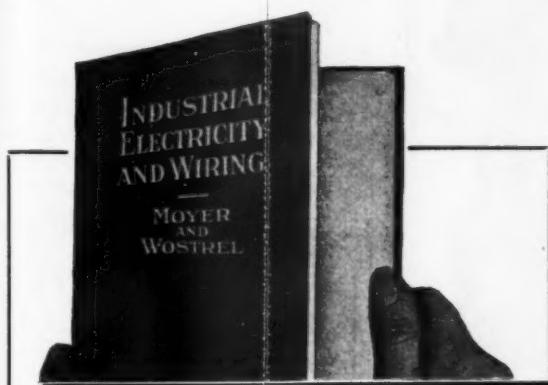
IT is the custom of the New York Department of Gas, Water & Electricity to order all wire replaced after it has been water soaked as result of a visit by the fire department. This would be a good ruling for other cities to adopt.

AT the Bettendorf Electric Co., Buffalo, N. Y., I found the boss, Willard Bettendorf, looking through a sheaf of bills and taking cash discounts. When I complimented him he said: "That's not all, either, I make a business of persuading my customers to do the same." He went on to say that, if it is put up to the customer right at first, in the proper way, a goodly percentage will take advantage of the discount, thereby benefiting the contractor.

I USUALLY find something interesting in the electrical section of the classified phone directory. In the St. Louis book the Efficient Electric Co., Inc., is listed all alone as "Industrial Electrical Contractors," the first I have seen this way.



How to handle any industrial wiring job to meet standard requirements



Here is a book that offers the practical worker a thorough training in electrical wiring for every industrial application. In addition to presenting standard, economical and efficient methods for doing every type of wiring, it also offers a thorough grounding in electrical theory; in the action and application of electrical equipment; the principles of lighting and power circuits; together with much other information needed for the effective handling of this work.

Industrial Electricity and Wiring

by JAMES A. MOYER

Director of University Extension, Massachusetts Department of Education

and JOHN F. WOSTREL

Instructor in Electrical Engineering, and Supervisor in Charge of Industrial Subjects,
Division of University Extension, Massachusetts Department of Education

469 pages, 5½ x 8, 281 illustrations and diagrams—Price \$2.75 postpaid

Some of the many topics covered

In the first and second chapters you will find a study of effects produced by electric currents, units of measurement, and practical applications. Following this, the book gives you detailed instructions on wiring conduits and moldings; wiring old buildings; wiring for industrial and household appliances; wiring generators, motors and transformers. Then you are given details on industrial and residential lighting, theater services, out-of-door uses, distribution systems, circuit control apparatus and many other applications.

281 charts, diagrams and drawings

Everything is clearly illustrated by diagrams, charts and tables. The practice described throughout the book is based on the 1929 National Electrical Code. In the chapters devoted to practical applications of wiring for electric light and power, material on the planning of circuits and estimating costs is included. A glance over the chapter summary will give you some idea of the wide compass of this work—but you should see this book to really grasp its scope. Take advantage of this free examination offer! Send for it to-day!

Chapter Summary

1. Fundamental Theory and Units
2. Splicing and Soldering Wires
3. Calculation of Wiring Systems
4. Wiring Methods and Types
5. Details of Wiring in Conduits and Moldings
6. Wiring Old Buildings and Unit Costs
7. Industrial and House Appliances
8. Electrical Generators and Generator Wiring
9. Industrial Electric Motors and Motor Wiring
10. Transformers and Connections
11. Industrial Wiring
12. Wiring for Theater Services
13. Residential Lighting Equipment
14. Estimating Industrial and House Wiring
15. Out-door Wiring
16. Distribution System
17. Circuit Control Apparatus
18. Grounding of Systems and Equipment
19. Wiring for Miscellaneous Services
- Appendix—Index—Reference to National Electrical Code.

This is a comprehensive exposition of the entire field of practical electrical wiring. It covers everything from fundamentals of electrical theory right down to the most effective methods for handling the newest electrical equipment. The treatment is simple, progressive and thorough—aimed so that the electrician can acquire the most helpful combination of the fundamentals underlying his problems and an ability to work most economically and efficiently through a knowledge of standard procedure.

Send no money—See this book free

At your request we will send you this book for 10 days' free examination. You owe it to yourself to see this book—if it can solve just one problem facing you it will amply repay you for any trouble you might experience in sending for it. See this book—use it for 10 days and then decide if this isn't a book you will want to have handy always.

Fill in and mail this coupon—NOW!

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McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York.
You may send me on 10 days' approval Moyer and Wostrel's INDUSTRIAL ELECTRICITY AND WIRING. Price \$2.75 postpaid. I agree to remit for the book or return it postpaid within ten days of receipt.

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(Books sent on approval to retail purchasers in the U. S. and Canada only.)

E.C. 2-31



Type AN



Type BN



Type CN

RUGGED RALCO RECEPTACLES



Type PRGN Plug

The watertight Circuit Breaking Receptacles and Plugs illustrated, have self-aligning floating contacts, arc resisting insulators, and separate terminals for protective ground.

Very easy to wire, made in 2, 3 and 4-Pole, 30 and 60 Ampere. Approved for use on both 250-Volt D.C. and 600-Volt A.C. Circuits.

Ask for Bulletin 102

Ralco Manufacturing Company

Designers & Manufacturers

125 No. Albany Ave., : Chicago, Ill.



Type DN



Type HN

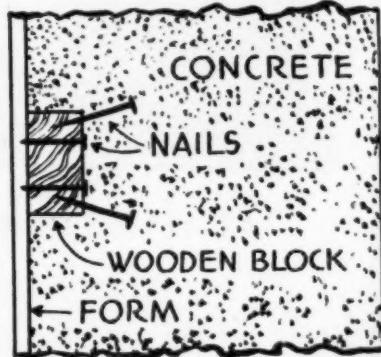


Type HF

PRACTICAL

Meter Box Support

The installation of a suitable support for meter boxes in poured concrete buildings is frequently a problem. William Piatt, Wilkesbarre, Pa., has found a quick way of installing a



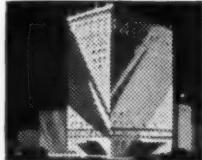
CROSS-SECTION SHOWING
BLOCK ANCHORED IN
CONCRETE

substantial support in concrete pillars.

As shown in the accompanying illustrations, a 2 x 4 in. block of wood, of the desired length is nailed lightly to the inside of the form so that it will be in the desired location when the form is in place.

Spikes are then driven part way into the block of wood and the form put in place. When the concrete is poured and set, the form pulls off of the block leaving it embedded in the con-

In St. Louis



Hotel Mayfair.....

8th and St. Charles

In the center of theatre and shopping districts. Floor lamps, fans, circulating ice water in every room. The quiet, refined atmosphere of an exclusive club-man hotel of distinction. Dining room. Coffee shop. Garage service.

400 ROOMS BATHS — \$3⁰⁰ to \$6⁰⁰



Hotel Lennox.....

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St. Louis' newest and smartest hotel opened September 3rd. In the heart of business district. Dining room. Coffee shop. Garage service.

400 Rooms with tub bath and shower — \$3⁰⁰ to \$6⁰⁰



Hotel Kings-Way...

West Pine at Kingshighway

Opposite beautiful Forest Park. Near bus, street car and motor highways. 20 minutes from downtown. Club breakfasts, table d'hôte dinners. Rooms for two from \$4. Special rates for permanent guests.

Heiss Hotel System KMOX



NAILING BLOCK TO FORM

CALMETHODS

crete, the spikes acting as anchors. This makes an excellent base for meter boxes or other electrical apparatus.

Keeping Track of Tools

To know on which job certain tools are located is a frequent problem for contractors. It is often hard to locate tools just when needed and also to fix responsibility when tools are lost or damaged.

The R. B. Randall Electric Co., Kansas City, Mo., has solved this problem by fastening a blackboard, as shown in the accompanying illustration.

DATE	JOB NO.	TOOLS	LADDERS
10/8/30	13-Ashley City Service	1-3" Toledo 1-1/2" Saw 1-Bench vice 1-Oil can 1-Gummed tape 1-Workshop box	2-12 ft. 2-8 ft.
10/20/30	KC Ox Gas Co 12th Bellevue N.C.	1-1/2" S.D. 1-3/4" S.D. 1-1/2" Hickey 1-3/4" "	2-10 ft. 2-6 ft.
			1-14 ft. May

BLACKBOARD FOR KEEPING TRACK OF TOOLS

tion, to the wall near the exit of the shop. Every wireman leaving the shop with tools or equipment must list on this board the items taken, the date and the job on which they are to be used.

Multiple Speed Coil Winder

A unique multiple speed coil winder has been constructed by the J & H Electric Co., Providence, R. I. The transmission of a discarded Chevrolet was removed and installed on a base at a convenient working height.



Trester Air Cooled Transformers

For
**LIGHTING
SYSTEMS and other
INDUSTRIAL USES**

NO oil—no special fireproof vaults—no special hangers—no maintenance or replacement charges—economical in operation—easy to install—can be hung on wall or mounted directly over lighting circuit cabinet. All come equipped with standard conduit connection—no extra fittings—conform to all electrical codes.

Single phase, two phase and three phase transformers. 115, 230, 460 and 550 volts.

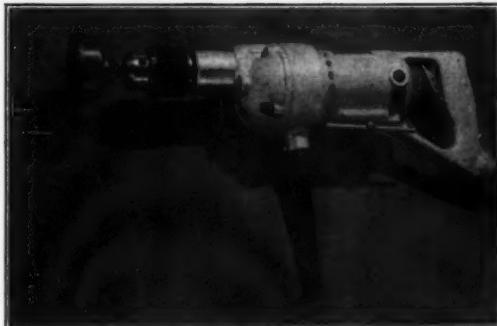
Transformers designed for special purposes.

Representatives desired in principal cities and Industrial centers.

TRESTER SERVICE ELECTRIC CO.
235 E. Odgen Avenue at Market Street, Milwaukee, Wis.

"Trester Service Since 1908"

Speed up Your Installation Jobs



with the new
RED STREAK

**1/4" Slow
Speed Drill**

Designed and built for jobs you are doing every day. A powerful slow-speed drill, 200 r.p.m., that cannot be stalled by hand drilling.

Particularly well adapted for hole saws up to 3" diameter, 1" wood bits, and for drilling unusually hard metal. The Red Streak 1/4" Slow-Speed Drill embodies the same advanced principles of design and construction as other Red Streak products.

Use Coupon for Complete Story

WAPPAT
INCORPORATED

A Division of Simonds Saw & Steel Co.

47 Braddock Ave.
Pittsburgh, Pa.

Name.....

Address.....

City.....

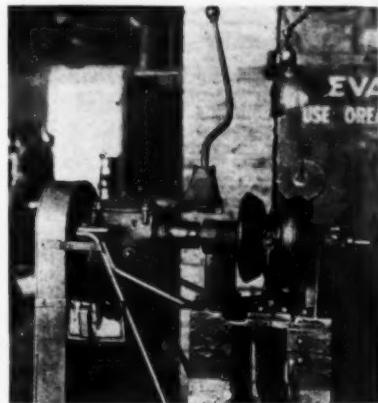
OAMCO OUTDOOR LIGHTING FIXTURES



A complete line of weatherproof and gas and vapor-proof lighting fixtures. Your customers use them around barns, garages, miniature golf courses, yards, etc. Reflectors are porcelain enameled; all iron parts electro-galvanized. Send for our latest bulletin No. 78 on outdoor lighting.

OVERBAGH & AYRES MFG. CO.
413 S. Clinton St. Chicago, Ill.

The driving end of the transmission was connected to a motor on the floor and the other to a spindle to which are attached the coil forms. The motor, located on the floor, connects with the transmission through a



MULTIPLE SPEED COIL WINDER

belt protected by a guard as shown at the left side of the accompanying illustration. A revolution counter is geared to the spindle and a reflector is rigged overhead convenient to the shaft end where the coil forms are fastened when the device is in operation.

By shifting the gear handle three speeds are obtained as in the operation of an automobile. The gear shift arrangement allows the operator to work at variable speeds according to the requirements of the particular job at hand.

Two Stamps of Approval

FIRST, the Underwriters Laboratory Label, signifying the approval of rigid conduit that meets with their rigid requirements.

SECOND, the hearty approval of electrical contractors, wholesalers, and architects everywhere, for the Original Rigid Steel Conduit—

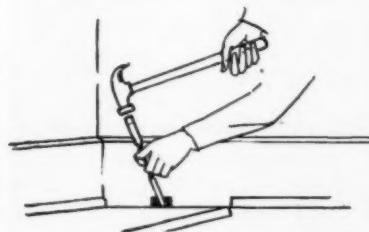
"LORICATED" and "GALVADUCT"



GARLAND MFG. CO.
PITTSBURGH, PA.

Rewiring

W. F. Booth of the Liberty Electric Co., Pittsburgh, Pa., has a good kink in old house wiring. He states that when fishing up from the cellar to put in a bracket or an outlet in the wall, it is customary to take off the baseboard. This not only takes a lot of time but may result in injury to the baseboard or to the plastering.



METHOD OF SLOTTING BASEBOARD TO FISH UP WALL.

SHOWCASE Lighting



No. 80 for T-6½ intermediate base lamp. Length, 8½"; width, 1¾"; height, 1¾".



No. 90 for T-10 Standard base lamp. Length, 9"; width, 2½"; height, 1¾".



No. 96 for Standard lamps to 60 watt. Length, 9"; width, 4¾"; height, 3¾".



No. 121 for Standard lamps to 100 watt. Length, 12"; height, 4¾"; width, 5¾".

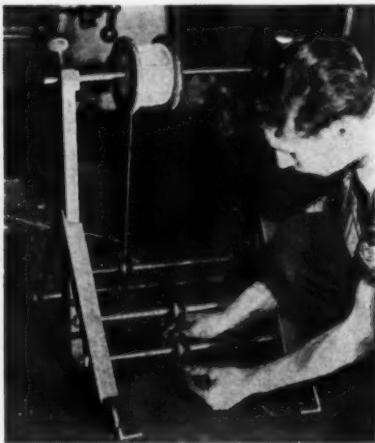
REFLECTOR DAY-BRITE COMPANY
3825 Laclede Ave. - Saint Louis

What he does is to remove the quarter round from the junction of floor and baseboard, and chisel a hole through the baseboard being careful that this hole will not show above the quarter round when same is replaced. It can, however, be made plenty wide.

Coil Winding Wire Spindle

A self-adjusting portable coil winding wire spindle has been built by, and is being used in the shop of Roberts & Kanze, industrial specialists in New York City.

The spindle, illustrated herewith, is



THREADING COIL WINDING SPINDLE

rigidly constructed of angle iron on which are mounted a number of shafts. The top shaft shown in the illustration is held in place by thumbscrews as it holds the spool of wire and should be easily removable.

Each of the lower shafts contains a pulley which is allowed to run freely



SPINDLE IN USE WITH COIL WINDER



Enlarging knockout for a $\frac{3}{4}$ " conduit in an outlet box.

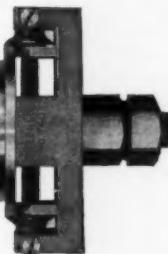
Cut Your Enlarging Hours to Minutes

Contractors, now you can quote lower on every job that requires the enlarging of knockouts. You can reduce your cutting time from hours to minutes, by using the Greenlee Knockout Tools. These tools will enlarge holes in metal in one minute or less per hole, doing away with all drilling, reaming and filing. One of the big reasons for their popularity is that they can be put in the most inaccessible places with the assurance that the hole will be enlarged in practically no time at all. Fill in the coupon and mail at once. These tools pay for themselves very quickly.



The Knockout Punch cuts holes to fit $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, and 2-inch conduit. Note that operation requires only a common wrench.

The Knockout Cutter, shown to the right, will cut holes in metal up to $\frac{1}{4}$ -inch thick. It cuts holes to fit $1\frac{1}{2}$, 2, $2\frac{1}{2}$, and 3-inch conduit. Enlarging is done by cutting, the power being applied by screw action.



GREENLEE TOOL CO. Rockford, Illinois

Please send me complete information on your Knockout Tools.

Firm _____

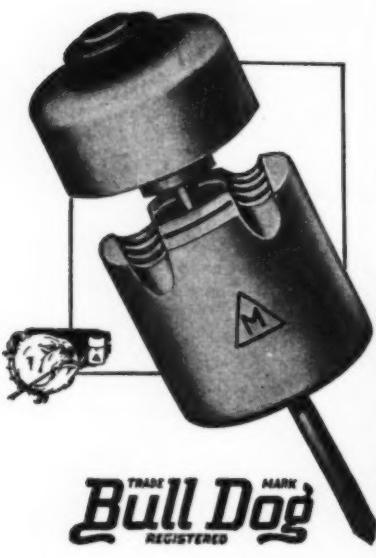
Name _____

Street _____

City _____

Jobber or Dealer _____

"It has a grip like its namesake."



Split Knobs

THESE are the safe, approved knobs for all types of residence wiring. They mean better jobs at no added cost. Bull Dog Split Knobs, together with Illinois Porcelain Tubes, Cleats and Solid Knobs form a complete line of standard porcelain.



Sold Through Wholesalers

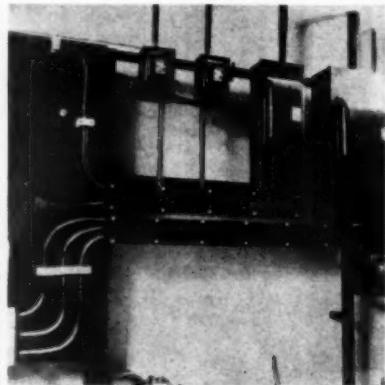
Illinois Electric Porcelain Co.
Macomb, Illinois

on its shaft. The wire is threaded through these pulleys as shown which cause just sufficient tension on the wire for proper winding.

The device can be easily moved to any desired position and works well with power drive winding machines.

Feed Switches Through Gutters

In wiring health unit No. 6 of the city of Boston, Mass., the Barnes-Pope Co. of that city made a 15 percent saving in feeding the safety



THE USE OF GUTTERS IN FEEDING LIGHT AND POWER SWITCHES.

switches for light and power distribution through iron gutters or troughs as illustrated. The cutting and fitting of conduit was thus eliminated and a neat looking job resulted.

The quality of the installation was also improved by mounting the switches and troughs on angle iron frame rigidly attached to the wall.

Raising a Motor to the Ceiling

Every now and then an electrical contractor is required to raise and fasten an electric motor to the ceiling. The usual method is to cut a hole in the floor and ceiling and raise the motor by means of a hoist erected on the floor above.

In many cases, however, the contractor is not permitted to cut a hole in the ceiling. The raising of the motor then becomes a problem and the job at best is a tedious one. James Hunter, superintendent of the Bison Electrical Co., Buffalo, N. Y., used the method illustrated herewith and states that it is the most successful

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IN THE
W. B. B.**

AND SO CAN
YOU IF YOU
DO LIKE I DO!

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who apply busi-

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ideas and plans featured in each issue of Wiremold Business Builder are making money and getting plenty of jobs to do.

IF YOU ARE NOT READING
EVERY ISSUE YOU ARE LOSING
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Send your name for mailing list—
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GENUINE
BAKELITE
TRADE MARK REGD. U. S. PAT. OFF.

**WEATHERPROOF
SOCKET
IS
SUPREME—
Accept no
substitute**



WORTHY OF ITS NAME

The KNOX GENUINE BAKELITE WEATHER-PROOF SOCKET is built to withstand the most severe weather conditions.

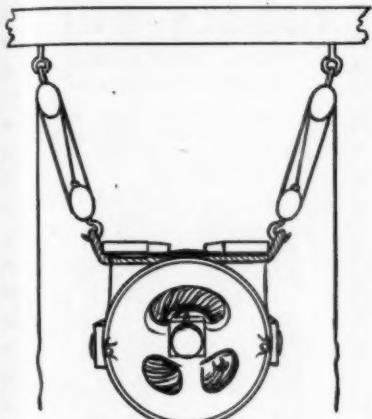
Whether you have a temporary job of decorating or a permanent installation insist on KNOX SOCKETS—Safety and Satisfaction Guaranteed.

*Sold Through Jobbers
Everywhere*

**KNOX PORCELAIN
CORPORATION
KNOXVILLE ••• TENN.**

method that this company has found for doing this job.

As shown in the sketch a block and fall is attached to the ceiling on each

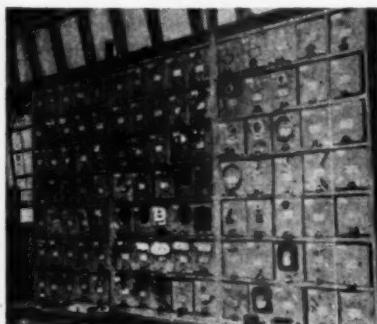


METHOD OF HOISTING MOTOR TO CEILING

side of the inverted motor. The upper pulleys are set far enough apart to clear and allow the motor to be raised almost flush. Naturally, the holes must be drilled and the bolts for the motor must be ready for quick work after the motor is raised.

Storing Small Parts

Every shop must have some systematic method of stocking small parts such as locknuts, bushings, covers, fuses, etc. Yet not every shop is large enough to use a stock clerk who knows where everything is kept. To facilitate the finding of these parts, A. W. Brown, Brooklyn, N. Y., formerly labeled his boxes containing small electrical parts. He discovered, however, that workmen take much less time in finding parts if a sample is wired to the face of the box, as shown in the photo.



SAMPLES WIRED TO THE FRONT OF THE STORAGE BOXES MAKE IT EASIER TO FIND SMALL PARTS.

Make Money and Save Money

Money-makers for contractors because they can be kept busy installing SORGEL *Air-Cooled* Transformers that save money for industrials. This is done by supplying the best suited voltages for *lighting and each type apparatus*, from A.C. power circuits.

**Stock 1/4 to 50 KVA. Single phase
Sizes 2-phase
Other sizes built to order 3-phase
110, 220, 440 and 550 Volts**

Because they're *Air Cooled*, they can be installed easily and economically inside of buildings, in any convenient place, without fire-proof vaults or other enclosures. No oil. No upkeep.

**SORGEL ELECTRIC CO.
Clybourn & N. Plankinton, Milwaukee, Wis.**

SORGEL
AIR-COOLED
TRANSFORMERS

3-phase unit

Approved by
Underwriters

With
Conduit
Connections

See Our New Catalog!



Q-D Rectangular Angle Reflector and Fittings. Porcelain enameled green outside, white inside. Lamp size 50 to 500 Watts.

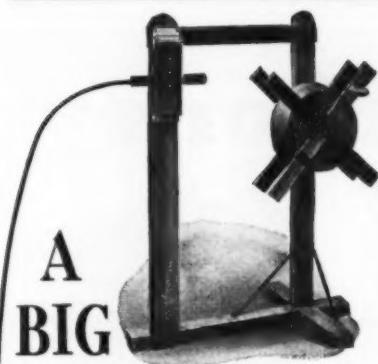
There are many new and interesting items and helpful ideas in our Catalog No. 4. Turn to page 23 and note the variety of ways you can use Q-D Rectangular Angle Reflectors. Three types interchangeable fittings: horizontal, vertical and outlet box. All are obtainable with pull or keyless medium sockets. Mogul sockets in horizontal and vertical type for lamps 300 to 500 Watts.

The interchangeable features, flexibility and new ideas embodied in the Quad line evidence the alertness of our designers and engineers in meeting modern needs.

**QUADRANGLE MANUFACTURING CO.
30 S. Peoria Street Chicago, Illinois**



A BIG MONEY SAVER



Eliminates triple handling—unwinding—measuring and rewinding wire, thus saving time and money. Manually operated—reels wire into neat coil, automatically counting and registering number of feet.

Strongly built of heavy selected materials so as to last a lifetime.

It Pays for Itself



Send for bulletin.
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Minneapolis Electric
and Construction Co.

80 S. 12th St.
Minneapolis Minn.

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"That Land Jobs"



Adequate buying information is the first essential of successful bidding.

Whether the job calls for a transformer to ring a single house bell or one to transform high tension voltages in a big industrial plant there is a STANDARD TRANSFORMER to take care of it.

Built right and priced right to help you land the job.

It will pay you to have a copy of our latest catalog on hand. Send for it now. Use the coupon below.

Standard

"Standardize with Standard"

CLIP AND MAIL COUPON TODAY

The STANDARD TRANSFORMER CO.
WARREN, OHIO

Kindly send me bulletins describing and illustrating your complete line of "Standard" Transformers.

Name.....

Address.....

City..... State.....

Birmingham Cooperates

(Continued from page 21)

merely the installation of the fixture itself.

In early May we were advised by the utility that the price that we made them on installing a meter loop and refrigerator receptacle, which amounted to \$22.00, was more than they could stand on the sales of these appliances. Therefore, a reduction was granted by changing the circuit price from \$10.00 to \$6.00, clearly stating in the letter that the price contemplated meeting the minimum requirements of the National Board of Fire Underwriters. After some receptacles were installed on this basis, we were notified by the Birmingham Electric Co. that our agreement was to install a separate circuit and that these receptacles which had been installed on another circuit would have to be re-wired, which of course meant that we had to discontinue the handling of the work. The Birmingham Electric Co. then made efforts to have it handled outside at a less price. This, we found out, was being let out by them on a basis of \$9.00 for meter loop and \$9.00 for the receptacle. Contractors outside of the association soon found that they could not make a go of it at this price on the combination.

During the latter part of June our association decided that they could no longer handle the Birmingham Electric work on prices previously agreed upon, and we proceeded to set up new prices based on actual costs, which we desired to start in with on the first of July. We asked for a meeting with the Birmingham Electric, which was granted. We went over in detail the costs and submitted prices that would give a fair profit to the contractors. We were confronted, however, with the statement by the Birmingham Electric Co. that some of the members were anxious to continue the work at the old prices, which necessitated our return to the association, where it was discovered that no such statement had been made by members. Under difficulties of this character we proceeded for some two weeks, during which time we found out where most of the trouble was and by both sides being fair-minded, laying our cards on the table, our difficulties were straight-

TRADE PAINÉ MARK

PAINÉ SPRING WING TOGGLE BOLT

WORK INSTANTLY
IN ANY POSITION

THE MOST PRACTICAL BOLT
FOR ATTACHING ANYTHING
TO HOLLOW WALL OR
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Seven Sizes Bolts—6-32 to $\frac{1}{4}$ " inclusive—Any Length—Any Style Head—Plain, Nickel Plated, Chromium Plated or Galvanized.

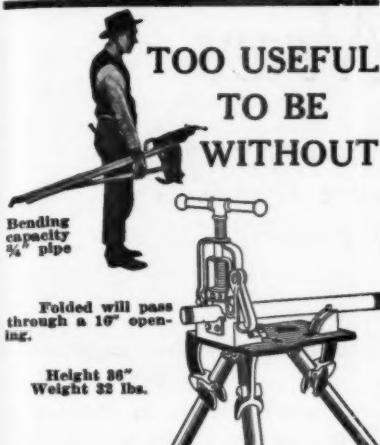
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AND PRICES

THE PAINÉ COMPANY

2945 CARROLL AVE. CHICAGO, ILL.
78 BARCLAY ST. NEW YORK, N.Y.

Beating Competition with Brains

Competition is tough in the electrical contracting business these days; and every day it gets worse. Successful contractors have found they can beat fly-by-night competition best by using their brains, and by educating their responsible employees. You can help your head men to keep abreast of the times and save you money by sending each his own copy of ELECTRICAL CONTRACTING.



You cannot be sure that you will not need a vise on any job so when attached to the "Handy Andy" Vise Stand you can have it with you ready for instant use at all times. The "Handy Andy" Vise Stand accommodates hinged or chain vises without drilling. Bends $\frac{3}{4}$ " pipe or conduit. Has no loose parts. Instantly set up or moved. Fully guaranteed. Accept no substitutes. Order from your Jobber.

HANDY-ANDY
VISE STAND
WESTERN WIRE PRODUCTS CO.
3rd and Spruce Sts.
ST. LOUIS, MO. U. S. A.

When Things Go Wrong - ELECTRICALLY

Use the Practical **POCKET-TESTER**

Test-rite

Pat. Oct. 21 '30
No. 1,778,883

DETECTS FAULTS

In Light and Motor Circuits, Spark Plugs, Household Appliances

Tests Any Voltage Between 100 and 550 A. C. or D. C.—No Switches Required

L. S. BRACH MFG. CORP.
NEWARK, N. J.

TORONTO, CAN.

\$150

ened out and the new price schedule set up, as shown in the accompanying table. Since that time these prices have been in effect with very satisfactory results from both sides as far as we have been able to determine.

In October we arrived at prices for Ivanhoe and Graybar units, as shown in one of the accompanying tables, whereby the Birmingham Electric would sell these units and place orders with the contractors for their purchase and installation.

Our method of handling this work, which has required some several months to work into its present state, was the giving by the association of unit prices on different items to the Birmingham Electric Co. We gave them a bond covering the full amount of all work done, this bond being signed by all members of the association individually. The Birmingham Electric Co. was given the names of certain contractors to handle certain classes of work and they send the orders direct to the contractors, this method having proved a very satisfactory way of handling the business.

The spirit of co-operation that has been manifested between the employees of the utility and the members of the association has been remarkable when one stops to think that during the first two months of this year there were no relations at all between the two, each side looking on the other as someone to be ignored entirely with the exception of always keeping a watchful eye on him. I feel that we have made a great step forward in our relation between the contractor and the utility, and frankly feel that it is just a beginning.

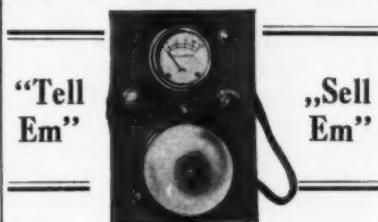


OLD WORK SPECIALIST:—W. F. Booth of the Liberty Electric Co., Pittsburgh, Pa., bought out his partner only a year ago, yet has built up a substantial volume consisting chiefly of remodeling, repairs, extra outlets, etc.



The Klein Torch has already proved its value in the electrical field, due to its extreme simplicity and rugged construction. If you are not familiar with the Klein Torch it will pay you to investigate.

Mathias **KLEIN** & Sons
Established 1861
3200 BELMONT AVE., CHICAGO



Right Now!
There are hundreds of live prospects in your community for

SAFEGUARD ALARMS

Rings when circuit is broken. For fire, incubators, brooders, stopped voltage, burglary, etc.

You'll be surprised how easy it is to get Safeguard Alarm business. Get started today by sending for our sales booklet.

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Safeguard Alarms

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Gentlemen: Please send me Safeguard Alarms Booklet.

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Manufacturers News

A department for the announcement of activities of manufacturers that are of interest to contractors, such as changes in executive personnel, branch offices, new products, etc.

Acquires Stanley & Patterson Supply Department

Westinghouse Electric Supply Co., distributing subsidiary of Westinghouse Electric & Mfg. Co., Pittsburgh, Pa., announces the purchase of the electrical supply distributing business of Stanley & Patterson, Inc., exclusive of the signal and radio manufacturing branches of the business.

George Patterson, president of Stanley & Patterson, will retain control of the company, while a new company, the Stanley & Patterson Electric Supply Co. will be formed by Westinghouse to carry on the wholesale business in the metropolitan area.

Trumbull Reorganizes Pacific Coast Factories

The Trumbull Electric Mfg. Co., Plainville, Conn., announces that the A. G. Electric Mfg. Co. will hereafter be known as the Trumbull Electric Mfg. Co., Pacific Division, with manufacturing plants located at Seattle and Los Angeles. The headquarters of this company are at 432 Fourth Street, San Francisco, under the management of H. F. Yost.

G. E. Co. Elects Vice-Presidents

The General Electric Co., Schenectady, N. Y., announces that T. K. Quinn of Cleveland and Charles E. Wilson of Bridgeport have been elected vice-presidents; H. H. Barnes, Jr., of New York, has been made commercial vice-president in charge of the New York district and J. L. Buchanan of Bridgeport has been named president of the General Electric Supply Corp.

It was also announced that vice-president Charles E. Patterson, in

charge of the merchandise department and Cummings C. Chesney, vice-president in charge of manufacturing, had retired.

P. B. Zimmerman of Cleveland will succeed Mr. Quinn as manager of the Cleveland office.

NEMA Appoints Two Chairmen for 1931

R. W. E. Moore, engineering manager of association activities of the Westinghouse Electric & Mfg. Co. has been appointed chairman of the Standards Committee of National Electrical Manufacturers Association for 1931.

L. F. Adams, commercial engineer of General Electric Co. will serve as chairman of Casualty and Fire Prevention Committee of NEMA for the same period.

Issues Color Card for Flexible Cord

As a helpful step in standardization the Flexible Cord Group of the National Electrical Manufacturers Association have just issued a NEMA standard color card for flexible cord. This card contains samples of colored cotton and rayon braids, fourteen colors of each, together with corresponding color names and numbers.

For cotton the colors are white, gray, old brass or oak, yellow, orange, light brown, olive, green, medium brown, dark brown, red maroon, blue and black. More satisfactory shades have been substituted for numerous colors.

The rayon colors are white, gray, old brass, yellow, rose, old gold, taffany, green, olive, red, maroon, blue, brown and black.

Each purchaser needs only one kind of card. The cards are $3\frac{1}{8}$ and $6\frac{1}{2}$ in. in size and are durably made.

General Electric Lighting Institute

A general course in illuminating containing the groundwork in fundamentals and including new lighting factors will be discussed by specialists at the General Electric Lighting Institute, Cleveland, on February 2 to 7. Lighting problems to be discussed include factories and workshops; stores and show windows; offices; schools; homes; streets and highways; floodlighting; decorative; signs; airports and sports.

Also several problems will be worked out by students to give them experience and confidence in actual illumination design.

The All-Steel Equip Co., Aurora, Ill., has issued a new catalog on steel boxes. This booklet contains illustrated descriptions of a complete line of cut-out boxes, flush cabinets, pull boxes, wiring troughs, special boxes, fuse cabs, guttered and weatherproof cabinets.

A booklet describing "Velvaton Door Chimes" has just been published by the Electric Signal Co., Ltd., Los Angeles, Calif. This booklet fully describes and illustrates the different styles and sizes of these door chimes, together with specifications for installation of same.

General Cable Corp., New York City, manufacturers of "Aelectral" insulated aluminum wires and cables, has published a 16-page booklet, describing in detail the basic facts concerning the aluminum conductors of Aelectral wires and cables; the basic considerations in the application; specific examples of applications and jointing technique, fittings and accessories.

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Harry Albert Hammond

Harry Albert Hammond, district sales manager of the New York metropolitan district for General Cable Corp., New York City, passed away January 1 at New York.

Mr. Hammond, for many years, had been connected with the Rome Wire Co., before it became a division of the General Cable Corp., and for a number of years resided at Rome until he was transferred to the New York office.

The following bulletins have been issued by General Electric Co., Schenectady, N. Y.: GEA-140A superseding GEA-140, entitled "Hand Starting Compensators"; GEA-841A, "Magnetic Switch"; GEA-579B superseding GEA-579A, "Automatic Full-Voltage Controllers for Synchronous Motors"; GEA-1321, "Air-cooled Transformers for Railway Signal Service"; GEA-1326 superseding GEA-724B and GEA-808A, "Totally Enclosed, Fan-cooled Induction Motors"; GEA-727B superseding GEA-727A, "Hesitating Control Relays for D-c Circuits"; GEA-1193A superseding GEA-1193, "Automatic Switchgear"; GEA-721, "Indoor Bus Supports"; GEA-959B superseding GEA-959A, "Type FKR-155 Oil Circuit Breakers," and GEA-372A superseding GEA-372, "Explosion Chambers."

New Commercial Vice-President for Westinghouse

Claxton E. Allen, formerly manager of the southwestern district of the Westinghouse Electric & Mfg. Co. was recently elected commercial vice-president, with headquarters at Pittsburgh, reporting to W. S. Rugg, vice-president in charge of sales.

Mr. Allen has been associated with the Westinghouse Co. since 1909, at which time he was head of the transformer division of the detail and supply department. Three years later he was appointed assistant to manager of that department. He was also attached to the sales department of the New York district office; was manager of the supply division and central station division of the Chicago office, and in 1922 was appointed manager of the St. Louis district office, which position he held until his present appointment.

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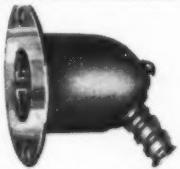
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New Electrical Products



The Marbelite Art Products Co., Chicago, announces a street lighting unit with reflectors on top and bottom to accommodate P.S.35—300 watt, P.S.40—500 watt and P.S.52—750, 1000 and 1500 watt lamps. The top reflector is adjustable to throw light in any direction. Unit is made of aluminum with wired glass panels and lifting door top.



A utility receptacle and outlet box has been designed by the National Electric Products Corp., Pittsburgh, Pa., known as catalog No. 60. The box has angle back and angle connector. A 15-amp. 125 volt—10 amp. 250 volt super-bakelite receptacle has face formed to provide automatic locating and centering of rugged T-slot terminals. Unit takes either armored or non-metallic sheathed cable. Wide brass flange with satin-mat finish completely covers opening.



The William E. Pfeiffer Co., Council Bluffs, Iowa, is manufacturing a utility alarm which is an alarm unit of closed circuit principle designed to meet many needs for fire and burglary protection. One of the features of this alarm is the cutting, breaking or "shorting" of the wire in circuit interrupting the current and starting alarm bell ringing.



American Playground Device Co., Anderson, Ind., is marketing the American floodlight equipped with a sliding socket to handle 300, 500, 750 or 1000-watt bulbs allowing focal points always to center of reflector. Another feature is ventilation by placing lamp socket in sliding tube, which carries out all heat generated by lamps. The reflector and adjustable socket are made of aluminum and galvanal.



Pass & Seymour, Inc., Syracuse, N. Y., announces a porcelain screw ring receptacle with cupped back for use with lighting fixtures and outlet boxes. A standard Edison base key socket body, consisting of double pole movement and Bakelite key is also announced.



The Arrow Electric Division, Arrow-Hart & Hegeman Electric Co., Hartford, Conn., announces radio outlet No. 2145 for radio connections. This bakelite unit has aerial, ground and power connections from a one-gang outlet, fits all standard-depth wall boxes, takes standard bakelite duplex receptacle plates; it has firm, positive contacts and a divider plate keeps aerial-ground and power circuits separated in wall box. Aerial, ground and power connections are plainly marked on receptacle and aerial and ground plug has blades set at angle preventing insertion in power slots of receptacle.



A manually operated 2 h.p. switch with thermostatic overload protection is announced by the Trumbull Electric Mfg. Co., Plainville, Conn., rated at 110-550 volt a.c. 10 amp., 2 and 3 pole, enclosed in a box 5½ in. wide by 7½ in. high by 5-1/6 in. deep. Among some of the features of this switch are front operated; slow make, quick break; drawn steel boxes; single moulded base; switch trips free from handle; bottom hinge cover and one ½ in. by ¾ in. concentric knockout in each side, each end and rear. Overload protection is provided by heater units readily interchanged from front of switch.



Superba lighting panels composed of bakelite units of curved design is announced by Bull-Dog Electric Products Co., Detroit, Mich. The Superba panel is of dead front type with individual doors over fuse compartments, which are an integral part of the face plates or unit covers. The construction of this panel permits ready change of circuit connections for both voltage and phase, without removing the door and trim or disturbing wiring connections. Cartridge fuse type Superba panels incorporate a fuse ejector feature for removal of cartridge fuses. Bakelite unit covers can be furnished in a variety of colors.

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Supplementing the library for the lighting specialist are the following bulletins published by the Union Metals Mfg. Co., Canton, Ohio: "Ornamental Street Lighting," a booklet of illustrations showing numerous applications of various types and designs of street lighting standards; "Ornamental Street Lighting Design, Book No. 101," showing illustrations of various types of standards and brackets and diagrams of installation methods; "Detroit—City of Light," a booklet illustrating the types of units and methods employed in lighting Greater Detroit; "America's Finest Families of Lighting Standards," a booklet illustrating various types of standards and giving construction details and detailed dimensions; "Fluted Steel Poles for Distribution and Transmission," a booklet illustrating various types of poles and giving data as to methods of anchorage, construction of foundations, examples on how to select proper poles, deflection tables and graphs of sag and tension of double trolley span wires; and "Exterior Lighting Fixtures," illustrating and giving specifications on various types of outdoor lighting standards.

Welded Products Corp., Kansas City, Mo., has published a new catalogue illustrating and describing "Welco" products, including Electro-Kabinets, spot-welding machines, etc.

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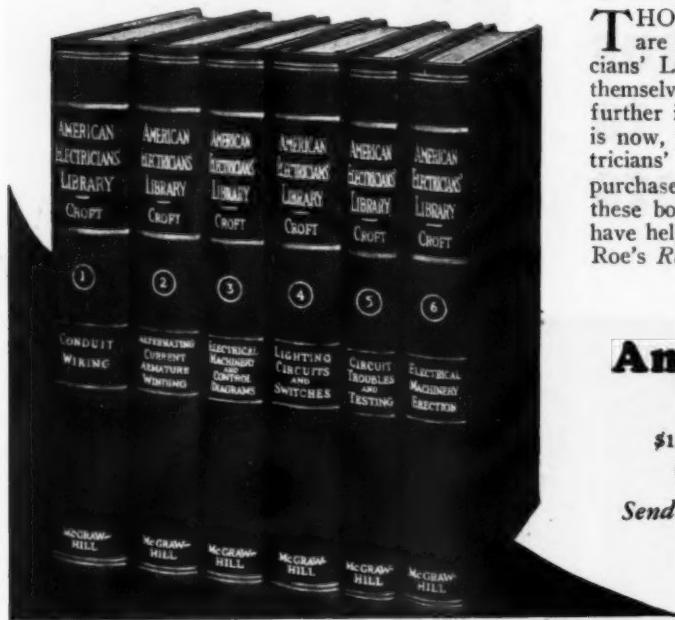
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